

Performance comparison of chromID™ Strepto B and CHROMagar™ StreptB to isolate *Streptococcus agalactiae* in pregnant women

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Background

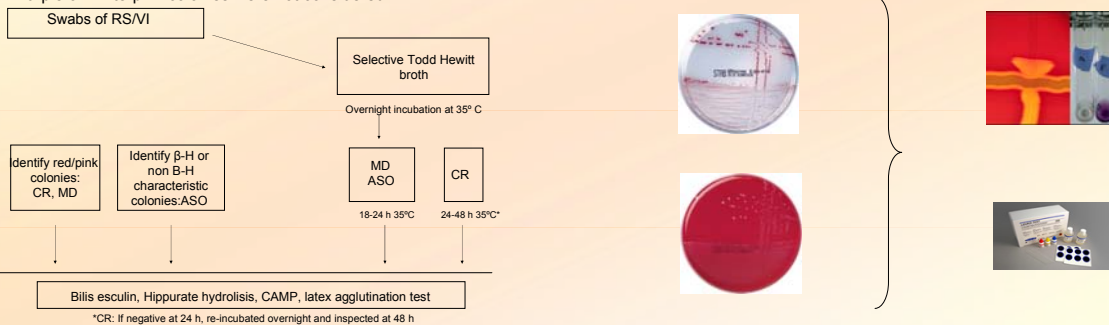
- Streptococcus agalactiae* (GBS) remains the main cause of neonatal sepsis with an incidence of 2 to 3 per 1000 birth and a case mortality of 15-20%.
- Perineal area and genital tract colonization by *S.agalactiae* is important in pregnant women since the transmission rate to newly born children is 50%, from which 1-2% of colonized ones develop clinical infection with a 10% mortality rate.
- The current Center for Disease Control and Prevention (CDC) guidelines for the prevention of perinatal GBS infection recommend that pregnant mothers be tested at 35-37 weeks of pregnancy for carriage of Group B streptococcal and prophylaxis intrapartum be provided to all GBS carriers in order to reduce incidence of neonatal disease.
- Prenatal practice modifications have reduced the incidence of early-onset neonatal group B streptococcal disease in the United States by approximately 80% over the past 30 years.
- Culture of GBS with selective broth media is considered the current standard for identification of GBS from prenatal patients. However, the process can be labor intensive and typically requires 2 days to provide results.
- Chromogenic medium have been developed for reducing time to detection of GBS.

Aim

- The objective was to compare the usefulness of chromID Strepto B (CR) (bioMérieux, France) and CHROMagar™ StreptB (MD) (Mediatec, France) medium for detecting *Streptococcus agalactiae* in pregnant women from the Todd Hewitt broth (THB) relating to the methods proposed by the CDC.

Material and Methods

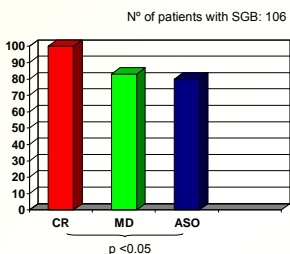
- 1276 swabs were analyzed, 638 from vaginal introitus (VI) and 638 rectal (RS) belonging to 638 women within 35-37 weeks of pregnancy.
- Samples were referred to the laboratory in Stuart medium.
- Both swabs were placed in one THB with 15 ug/ml supplement of nalidixic acid and 10 ug/ml of colistin. After 24hs incubation, subcultures in CR medium, MD medium and agar with 5% sheep blood (ASO) were performed from THB.
- Suspicious colonies, red (CR and MD mediums) and gray ± beta hemolysis in ASO were identified by conventional test such as Gram stain, catalase, bile-aesculin, CAMP, hippurate hydrolysis and group B serology.
- Purple or white-pink colonies were not considered.



Results

EGB was isolated in 106 patients, with a prevalence of 16.6% (106/638).

Comparison of methods



CR CR harvested from selective Todd Hewitt broth
ASO: Columbia blood agar harvested from selective Todd Hewitt broth
MD: MD harvested from selective Todd Hewitt broth

Detection of *S.agalactiae*. Comparison of Methods (II)

Method	Sensitivity (%)	Specificity (%)	PPV (%)	PNV (%)
CR	100	100	100	100
MD	83	96	82	97

$p < 0.05$ $p: 0.76$

Gold standard: positive cultures for SGB in CR + MD + ASO, from Todd Hewitt broth enrichment

Performance characteristics of CR and MD cultures for *S.agalactiae* detection (I)

Method	True-Positive (n)	False-positive (n)	True-negative (n)	False-negative (n)
CR	106	0	532	0
MD	84	22	514	22

N: 638 patients

Gold standard: positive cultures for SGB in CR + MD + ASO, from Todd Hewitt broth enrichment

Conclusions

- The cornerstone of many GBS prevention efforts is identifying the bacteria from pregnant women as soon as possible.
- Laboratory work and the possibility of false negative results due to the absence of colonies with beta hemolysis (ASO) is decreased by the use of CR medium
- THB subculture performance in CR was outstanding as regards the method proposed by the CDC.
- The specificity of both chromogenic medium (CR, MD) was comparable ($p > 0.76$) but the sensitivity was significantly better ($p < 0.05$) with CR medium.
- There was not a significant difference in sensitivity between ASO and MD (p : NS).

References

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