EVALUATION OF THE STREPB SELECT AGAR FOR THE DETECTION OF GROUP B STREPTOCOCCI FROM VAGINAL AND RECTO-VAGINAL SPECIMENS

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ABSTRACT

OBJECTIVES
To evaluate the performance of the StreptoB Select Agar (SBS), a new chromogenic medium, Biorad France, for the selective growth and identification of β-hemolytic (GBS) and non-hemolytic (HGS) GBS as blue-turquoise colonies.

By comparison with culture on Granada (GRA), StreepB ID (SBID) and Columbia sheep blood agar with colistin-nalidixic acid (BA).

METHODS
Clinical specimens and culture procedure
From August to November 2007, a total of 500 vaginal or vago-naloc-retal swabs were collected from pregnant or non-pregnant women at the university hospital of Liege.

RESULTS

GBS Cultures (48 h)
On these 3 selective differential media, colonies were usually tiny after overnight incubation. The easiest to read after overnight incubation is the Granada agar, but a prolonged incubation is needed for all 3 agaras.

GBS on StreepB Select
GBS on Granada
GBS on StreepB ID

GBS colonization rate
Overall, the colonization rate was 29.4%: GBS were isolated from 147/500 swabs. Two isolates were non-hemolytic strains.

Sensitivity to detect GBS
Detection of GBS from vaginal/vagino-retal swabs
From Positive cultures (% of positive swabs)

<table>
<thead>
<tr>
<th>Cultures</th>
<th>SBS</th>
<th>GRA</th>
<th>SBID</th>
<th>BA</th>
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</thead>
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<tr>
<td>Direct</td>
<td>103 (76.1)</td>
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<td>After Lim</td>
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GBS colonization rate

SBS
GRA
SBID
BA

Positive cultures
94.3%
88.4%
84.4%
81.6%

False+
77.9%
87.9%
87.9%
62.8%

False-
82.1%
91.6%
95.6%
37.2%

Positive Predictive Value
70.1%
76.3%
76.3%
84.3%

Overall sensitivity were 94.6% on SBS, 84.4% on GRA, 87.1% on SBID and 81.6% on CNA. Characteristic colonies of presumptive GBS were not always confirmed as GBS; 41 from primary cultures and 38 after Lim enrichment on SBS, 22 and 17 on SBID and 45 and 59 on CNA. Overal sensitivity was 94.6% on SBS, 84.4% on GRA, 87.1% on SBID and 81.6% on CNA.

RESULTS

SBS, GRA and SBID

SBS as SBID are incubated in air and do not require CO₂. In air, GBS are more sensitive than BA in direct culture and in Lim sub-cultures.

SBS as SBID

GBS as SBID

SBS: Very high sensitivity for growth and detection of GBS
The highest sensitivity (%) by comparison to SBID and GRA
More sensitive than BA in direct culture (p<0.03)

SBS, GRA and SBID

Reading improved after 48 h incubation. SBS characteristic colonies easily detected within a mixed flora even if GBS in low numbers.

SBS as SBID

Aerobic condition for incubation.
Not 100 % specific, confirmation needed for presumptive GBS
Detection of non-hemolytic colonies.

GRA
An aerobic condition for incubation.
100% specific, no need for GBS confirmation tests: lowest workload.

BA
The less sensitive agar.
Not 100 % specific, confirmation needed for presumptive GBS.
Non-hemolytic strains undetected.

DISCUSSION & CONCLUSION

StreptoB Select, a new chromogenic medium, has demonstrated very good performances for GBS prenatal screening culture of vaginal-retal swabs. To perform GBS prenatal screening cultures, the lowest workload with the highest sensitivity could be expected with a combination use of SBS or SBID with GRA for Lim sub-cultures.

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BACKGROUND
To prevent GBS perinatal diseases, current guidelines recommend intrapartum antibiotic prophylaxis for women “at risk”, they are based on prenatal screening culture of all pregnant women at 35-37 weeks of gestation for rectal and vaginal GBS colonization. To provide the highest sensitivity, culture methods must include an enrichment in selective broth like Lim broth, further sub-cultured on a blood agar plate. However, this enrichment broth is not totally selective for GBS and other Gram positive cocci may as well be enriched by this method, possibly hiding GBS.

Use of selective and differential media as Granada type agar or ChromID StreptoB agar improves sensitivity and workload of these cultures.

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