Evaluation of a pattern of culture for detecting *Streptococcus agalactiae* carriage using GBS modified medium☆

Evaluación de una pauta de detección de colonización vaginorrectal por Streptococcus agalactiae *usando medio de cultivo GBS* modified

The detection of colonisation by *Streptococcus agalactiae* (GBS) using a culture of rectovaginal exudate (RVE) in weeks 35–37 of pregnancy and intrapartum antibiotic prophylaxis have proven to be effective in the prevention of vertical transmission of GBS.[1]

The use of Granada medium (GM) and of chromogenic media, which enable easier identification of group B streptococcus (GBS) and seem to have a greater or similar sensitivity to the use of enrichment broth (EB) and subculture in blood agar, has been widespread for a number of years.[2,3]

In the Spanish Recommendations updated in 2012, several options for the processing of the sample were listed: incubation of the RVE in Todd-Hewitt EB with gentamicin + nalidixic acid or with colistin + nalidixic acid and subculture in blood agar; direct seeding of the sample in Granada broth; direct seeding in a plate of GM and in EB, and subculture this if the plate is negative after 18–24 h; or seed directly in a plate of GM and incubate in anaerobiosis until 48 h.[4]

The characteristics of the culture medium GBS modified agar (RPD Microbiology), modification of the New Granada Medium, have been evaluated in our laboratory for the detection of GBS in RVE. According to the summary of product characteristics for the medium, the modifications consist of the suppression of glucose and pyruvate and the reduction of the starch content and increased horse serum.

The RVE in Amies transport medium were preserved at room temperature until they were seeded, firstly in half of a plate of GBS, and then in a tube with Todd-Hewitt broth (Todd Hewitt with gentamicin and nalidixic acid, Becton Dickinson, Sparks, MD, USA; or Todd-Hewitt with CNA, Oxoid, Wesel, Germany) incubated at 37 °C for 20–24 h, with subsequent reseeding in the other half of the same plate of GBS. All the plates were incubated until 48 h in a CO_2 atmosphere, placing a cover slip on the seeding area, in accordance with the method described by Rosa-Fraile et al.[2] The unclear colonies (not clearly orange) were checked using a specific agglutination test (Pastorex Strep B, Bio-Rad, Marnes-la-Coquette, France).

A total of 80 RVE were seeded simultaneously in GBS and in GM (Becton Dickinson GmbH, Germany).

A total of 436 RVE were processed in GBS. In the direct seeding there were 73 positives (16.7%) and 79 (18.1%) in the seeding after enrichment. Taking into account both patterns, 84 positive results (19.3%) were obtained. The sensitivity, considering the sum of the positive results for any of the two patterns as the gold standard, was 86.9% for the direct seeding and 94.1% for the seeding after enrichment (non-significant differences, $p = 0.113$). The kappa index was 0.863.

A total of 18 discrepancies were observed: in 12 GBS was isolated only in subculture after enrichment, and in the other six, only in direct culture.

In the comparison with GM, GBS was isolated in 21 cases: 19 by both media, one only in GM and another only in GBS (in both, after the subculture from Todd-Hewitt broth). The concordance was 97.5% and the kappa index was 0.933.

Previously, differences were reported in the results when comparing the direct seeding and an EB and subculture, attributable to various factors.[2,5–7] The Todd-Hewitt broth may improve the detection in samples with limited concentration of GBS[7], while the false negatives observed in the subculture could be due to overgrowth of other bacteria, in particular Enterococci or resistant Gram-negative bacteria, such as *Pseudomonas* or *Proteus*[2]. There may also be differences in the concentration of the inoculum, as some seedings are done directly from the swab and others from the EB.

Although a good concordance is observed between both patterns and the differences are not significant, the sensitivity is greater in the seeding after culture. The culture using both patterns in the same plate increases the detection of colonised pregnant women without a significant cost increase, and the use of the same plate for each patient makes it impossible to have cross-contamination. The growth in the direct seeding makes it possible to bring the diagnosis forward by one day in most cases.

Lastly, a good concordance has been observed when comparing the results of GBS modified agar with those of GM.

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Conflicts of interest

None.

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