IMPROVEMENT OF TRANSPORT CONDITION OF SWABS FOR GROUP B STREPTOCOCCAL (GBS) SCREENING

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P. Melin, M. Dodémont, G. Sarlet, R. Sachell, J. Descy, C. Meex, P. Huynen, MP. Hayette
National Reference Centre for GBS, University Hospital of Liège, Liège, Belgium

ABSTRACT

BACKGROUND

In 2013, neonatal GBS diseases remain a notable global public health concern. From the 1990s to the present, where guidelines for prevention of perinatal GBS disease have been widely implemented, the incidence of neonatal early onset disease (EOD) has dramatically decreased to 0.5 cases per 1000 live births but has not been eradicated. Despite preventive strategies, cases still occur and continues to be an important cause of neonatal sepsis and meningitis. The screened-based strategy for prevention of perinatal GBS disease recommends that all pregnant women should be screened on 35-37 week of gestation for GBS vaginal and rectal colonization. Antibiotics should be given at delivery to women identified GBS positive. Among crucial criteria to control in this context are the type of specimen collected, the time of collection, transport conditions and microbiological procedures. GBS guidelines as many others recommends the use of appropriate transport media (Armit, Stuart, e.g.) and processing of specimen as soon as possible within 1-4 days. False negative cultures occur for several causes including lack of GBS viable, storage before transport. Several studies showed the negative impact of the length of time that has elapsed between collection and inoculation to the recovery of GBS. In Belgium the recommended procedure for culture includes a selective enrichment step in Lim broth further sub-cultured on selective and/or agar on Granada medium or on a specific chromogenic agar. Aiming improvement of transport conditions to sustain GBS viability, could Lim broth, recommended in the future procedure, and Granada tubes used as swab transport media or would their selective antimicrobial content impact viability of GBS after prolonged exposure?

METHODS

Three clinical strains of GBS isolated from invasive diseases were selected from the collection of the NRC for GBS. They represented the most frequent serotypes identified in perinatal infections: capsular serotypes Ia, III and V.

RESULTS

Recovery of GBS after different periods of storage in different conditions.

No difference of survival was observed between the 3 strains whatever were the combinations of the tested conditions, except at 35°C for the Granada broth. Therefore, results were aggregated per medium and condition apart for Granada broth at 35°C.

DISCUSSION & CONCLUSION

A key improvement for screening GBS cultures at 35-37 weeks gestation would be the preservation of GBS viability during long-term transportation aiming a reduction of the rate of false negative cultures.

- Currently use of non-nutritive transport media stored at 4°C is recommended even if progressive lost of viability is well known after 24 hours.
- But during transport and storage before transfer to the lab, specimens are often exposed to various temperatures sometimes for extended period of several days.

This study aimed to demonstrate the robustness of alternatives to non-nutritive media for transportation of swabs collected for GBS screening culture.

- Use of a selective enrichment broth, as Lim broth, already recommended for culture as transport media could represent a true improvement.
- Viability was not only sustained, but the initial inoculum of GBS was also amplified resulting in increase of culture sensitivity even for low initial inoculum.

Clinical utility is necessary to confirm all these benefits without interference of the commensal flora.

REFERENCES

- Prevention of perinatal group B streptococcal disease: Revised guidelines from CDC 2010. MMWR 2010;59 (RR-10):1-32