

Laboratory diagnostic methods comparison, antibiotic susceptibility pattern and serotyping of invasive and colonizing group B Streptococcus (GBS) isolates at a selected group of hospitals in Sri Lanka

Abstract

Introduction

GBS cause significant morbidity and mortality in neonates, pregnant women and patients with underlying comorbidities. Intra-partum antibiotic prophylaxis (IAP) is currently the mainstay of prevention of neonatal GBS disease and effective vaccine against invasive GBS disease is under clinical trial.

Objectives

To validate GBS laboratory diagnostic methods and to describe antibiotic susceptibility pattern (ABST) and serotypes of GBS.

Methodology

Study was a descriptive cross sectional study and isolates which were identified as GBS from high vaginal swabs (HVS) and sterile body sites were collected from selected hospitals. Collected isolates were subjected to phenotypic identification tests including CAMP which is described by Christie, Atkins and Munch-Peterson, bile aesculin hydrolysis (BE) and Lancefield grouping test. ABST (CLSI-disk diffusion) and serotyping by latex agglutination (ImmuLex™ Strep B) were performed on confirmed GBS isolates by Lancefield grouping test.

Results

Of 145 collected isolates 137 isolates were confirmed as GBS by Lancefield grouping test. Compared to the Lancefield grouping test, CAMP test showed 100% sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

Sensitivity, specificity, PPV and NPV of the negative BE test were 99.27%, 25%, 95.77% and 66.66% respectively. Penicillin and cefotaxime were 100% sensitive against tested GBS isolates. Sensitivity of clindamycin and erythromycin were 74.4% and 76.6% respectively. Serotype III was the most predominant in invasive GBS isolates followed by serotype Ia, Ib, VI, II and V. Serotype VI was the most predominant in HVS isolates followed by serotype III, V, Ia, II, Ib and IV.

Conclusion

CAMP test has 100% sensitivity, specificity, PPV and NPV in GBS identification. Surveillance on clindamycin susceptibility is important to predict the empiric antibiotic in IAP. Serotype distribution is closer to other countries and is an advantage in future vaccine introduction. GBS vaccine currently under clinical trial (Ia, Ib and III) is potentially effective for preventing 73% of the invasive GBS disease of infants in study population.