



Invasive group B Streptococcus in Kuwait 2004-2014: serotype distribution and antimicrobial susceptibility profile

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BACKGROUND

Group B streptococcus (GBS) is an important neonatal pathogen known to be associated with high morbidity and mortality. GBS is a well-known etiology of postpartum infection and recently is considered to be an emerging pathogen in adult patients causes severe sepsis and invasive infections. The aim of this study was to determine the serotype distribution and antimicrobial susceptibility of GBS isolated from blood and CSF culture over 11 years from neonates and adult patients in Kuwait.

METHODS AND MATERIALS

From 2004 to 2014, 111 non-repetitive isolates were studied. The identification was performed using Vitek-2 (Biomérieux, France) and confirmed by streptococcal serogrouping kit. Serotyping was performed with latex agglutination kit (Denka Seiken, Japan). Minimum inhibitory concentration were determined for penicillin, ampicillin, erythromycin, clindamycin, gentamicin, vancomycin, teicoplanin, and tetracycline by E test. The double disk synergy test (D-test) for erythromycin and clindamycin was performed to determine the inducible resistance.

RESULTS

Among 111 isolate, 103 (92.8%) were blood isolates 79 (71.2%) from neonates and 24 (21.6%) from adults while 8 (7.2%) were from CSF. The study period was divided into three time frames 2004-2006, 2007-2010 & 2011-2014). Serotype III 32 (28.8%) was most prevalent among the six serotypes identified, followed by V 23 (20.7%), Ia & II 17 each (15.3%), Ib 9 (8.1%), IV 8 (7.2%), VII 1 (0.9%) and 4 (3.6%) were NT. The serotypes dominance were variable over the years notably in 2011-2014 serotype Ib was the dominant 7/38 (18.4%) followed by Ia, II, III and V each 6 (15.8%) (Table 1). All isolates were sensitive to penicillin, ampicillin, vancomycin and teicoplanin while 105 (94.6%) and 106 (95.5%) were highly resistant to gentamicin and tetracycline respectively. The overall resistance rate to erythromycin was 35 (31.5%), however, it was 13.2% in 2004-2006, 25.7% in 2007-2010, and 55.3% in 2011-2014. Clindamycin resistance rates were 5.3% in 2004-2006, 5.7% in 2011-2014 and 23.7% in 2011-2014 with 13 (11.7%) overall rate (Table 2). Inducible resistance was detected in 8 isolates. A high level erythromycin and clindamycin- resistant strains with MIC > 256 µg/ml were (20% & 61.5%) respectively. High level erythromycin and clindamycin resistance rates were (0% & 50%) in 2004-2006, (11.1% & 50%) in 2007-2010 and (28.6% & 66.7%) in 2010-2014 respectively. Resistance to either erythromycin and/or clindamycin was (50%) among serotype IV, (43.8%, 33.3%, 30%, 23.5% & 17%) among serotype III, Ib, V, II & Ia respectively.

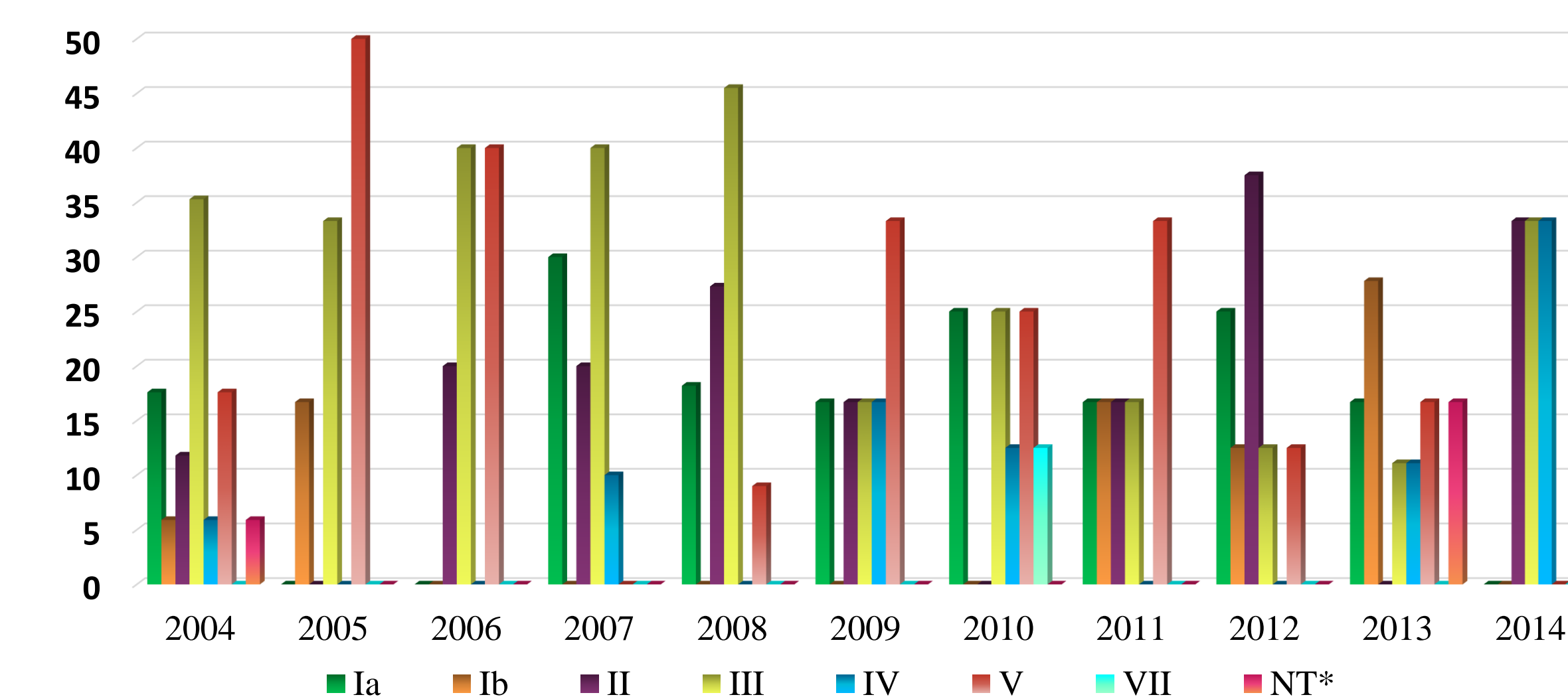


Figure 1: Serotype distribution of the invasive group B Streptococci in Kuwait 2004-2014

Table 1: Percentage of resistance to erythromycin and clindamycin among invasive Streptococcus group B isolates in Kuwait 2004-2014

Study Period	Total No. of invasive GBS isolates	Erythromycin resistance No. (%)	Clindamycin resistance No. (%)
2004-2006	38	5 (13.2)	2 (5.3)
2007-2010	35	9 (25.7)	2 (5.7)
2011-2014	38	12 (55.3)	9 (23.7)

CONCLUSIONS

This study, identified the change in the dominance of serotypes associated with invasive infections over the study period with notable decrease in serotype III & V and increase in serotype Ib. There were significant increase in resistance to erythromycin and clindamycin over the study period. Resistant serotypes in this study were different than what was reported in literature.

Key word: GBS, Invasive infections, Kuwait