P1037

Abstract (poster session)

Recent changes in the proportion of piliated pneumococci: consequences of vaccine use and future prospects

S.I. Aguiar*, J. Melo-Cristino, M. Ramirez (Lisbon, PT)

Objective: Evaluate the recent changes of the prevalence of the two pilus islets (PI-1 and PI-2) among Streptococcus pneumoniae recovered from invasive infections after 7-valent vaccine (PCV7) use. Methods: Pilus-like structures have been recently recognized in pneumococci, implicated in virulence and suggested as potential vaccine targets. However, these structures are not universally distributed among pneumococcal strains. We had previously demonstrated that carrying PI-1 was a clonal property of S. pneumoniae and that only 27% of the invasive strains carried the rlrA islet. Furthermore, 83% of these piliated strains expressed vaccine serotypes. Similar findings were reported by others for the PI-2 islet which was shown to be present in 16% of a convenience sample and associated with serotypes 1, 2, 7F, 19A, and 19F. To evaluate the distribution of pili in invasive pneumococci we determined the presence of the two pilus islets in a collection of invasive isolates recovered from children and adolescents (<18 years) in Portugal between 2003 and 2009 (n=623) and analyzed their association with capsular serotypes, antimicrobial resistance and clusters defined by PFGE and MLST. We also evaluated the impact of PCV7 in pili distribution by comparing with the datasets of the pre-vaccine period (1999-2002). Results: Overall, 49% of the strains presented one of the pilus islet. A high correspondence between serotype, PFGE and presence and type of pili was observed (Wallace coefficient, W>0.8). The rlrA islet was identified in 15.6% of the strains, most of them expressing serotype 6B, 9V, 14, 19A and 19F, as seen previoulsy. In contrast, the PI-2 islet, was found in 37.6% of the pneumococcal strains and was found mainly among serotypes 1 and 7F, two serotypes not included in the current PCV7 formulation but covered by the currently used PCV13. Conclusion: A decrease in the presence of the PI-1 islet among invasive pneumococcal strains was observed in the post-PCV7 period. However, an increase of the proportion of strains carrying the PI-2 islet was observed which suggests that expression of pilus-like structures may be important for the ability of pneumococci to cause IPD. Yet, since most of the strains carrying pili presented serotypes that are included in current conjugate vaccine formulations, their potential use in a vaccine would offer limited additional benefits.