TITLE: DYNAMICS OF OROPHARYNX CARRIAGE BY BETA-HEMOLYTIC STREPTOCOCCI

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ABSTRACT:

Beta-hemolytic streptococci comprise several species of clinical relevance. Streptococcus pyogenes (GAS) is the main bacterial cause of pharyngitis and it is responsible for a large spectrum of human diseases. Streptococcus dysgalactiae subsp equisimilis (SDSE) causes GAS-like infections. Streptococcus agalactiae (GBS) is a neonatal pathogen also related with infections in adults with comorbidities and elderly. Streptococcus anginosus group (SAG) are members of the throat microbiota and rarely associated with pharyngitis. This study evaluated beta-hemolytic streptococci throat carriage prevalence and persistence in 121 children and 127 young adults (YA). Molecular typing was also performed, in order to evaluate the genetic background of bacterial isolates. Oropharynx secretions were cultured and carriers were submitted to quarterly screening up to 12 months, while persistent colonization could be detected. Isolates were identified to species level. Typing of emm genes (GAS and SDSE) and capsule encoding genes (GBS) was performed by DNA sequencing and PCR-based methods. Analysis of genetic diversity was done by pulsed field gel electrophoresis (PFGE). Initially, 34 isolates were recovered: 17 from children (all GAS) and 17 from YA [GAS (3), GBS (4), SDSE (8) and SAG (2)]. During persistence evaluation, 10 GAS isolates were recovered from children in six months of screening, while 22 isolates [GAS (2), GBS (2), SDSE (17) and SAG (1)] were recovered from YA during one year. Exchange of species (GAS/SDSE and SAG/GBS) and SDSE serological groups were observed in two young adults during the screening. Six emm types were found among GAS isolates, being emm87.16 and emm89.0 the most frequent, detected in 13 and 5 children, respectively. Other emm types were emm76.0, emm1.0, emm77.0 and emm90.9. Among SDSE, the following emm types and subtypes were found, stG2574.0, stG653.0, stG480.0, stC36, stC36.0, stC36.11, stC1400, stC1400.0 and stC1400.12. Three new *emm* subtypes were identified in this study, including the most frequent emm87.16, emm90.9 (both in GAS) and stC36.11 (in SDSE). Three GBS capsular types were detected (Ia, Ib and III). A strong correlation was observed among emm types and PFGE profiles, where six clonal groups were found among GAS, 10 among SDSE isolates and five among GBS. Prevalence was slightly greater among children, but persistent carriage was greater among young adults, being SDSE the species most associated with persistence.

Keywords: Beta-hemolytic streptococci, oropharynx carriage, genetic diversity

Development agency: Capes, Proppi-UFF