

ABSTRACT

MOLECULAR CHARACTERIZATION OF *STREPTOCOCCUS PNEUMONIAE* ISOLATES IN TRINIDAD & TOBAGO

Michele Nurse-Lucas

Streptococcus pneumoniae globally, continues to be a major cause of morbidity and mortality. There is a paucity of data on the antimicrobial susceptibility and serotype distribution in the Caribbean region including Trinidad & Tobago. The main objective was to delineate the molecular characteristics of *Streptococcus pneumoniae* isolates in the country so as to determine their prevailing serotypes, sequence types and antimicrobial profiles.

This was a cross sectional observational study of 97 pneumococcal isolates collected from regional hospitals in Trinidad & Tobago from November 2011 - October 2013. The serotypes were determined using sequential multiplex PCR and Neufeld quelling chessboard-typing techniques. Antimicrobial susceptibility was determined using disc diffusion and broth dilution methods and interpreted according to Clinical and Laboratory Standard Institute (CLSI) guidelines. Further characterization of the macrolide resistance was determined as well as sequence type of the isolates using multilocus sequence type (MLST) method.

Most of the isolates (47.2%) were collected from children <5 years. The most prevalent serotypes were 23F, 6B, 19F and 6A. Over thirteen percent (13.4%) of the isolates exhibited resistance to three or more antibiotics mostly in serotypes 19F and 19A. Fifteen new sequence types were assigned; fourteen clonal complexes belonging to seven of the 43 international Pneumococcal Molecular Epidemiology Network (PMEN) clones as well as the global resistant clone 19A (ST 320) was encountered. Of the 13 isolates with multidrug resistance, 10 belonged to globally distributed clones PMEN3 and PMEN14 and were isolated in the post-PCV period, which suggest a clonal expansion.

This molecular analysis of pneumococcal isolates confirms that 23F, 6B and 19F and trimethoprim-sulfamethoxazole were the predominant serotypes and resistant antibiotics associated with pneumococci isolates in Trinidad & Tobago. There is however alternative antibiotics for treatment of pneumococci infections in the country and such infections appears to be protected by currently used vaccines.

Key words: Antibiotic Resistance; Invasive Pneumococcal Disease (IPD); MLST; PCV 10 & PCV 13; Serotypes; Sequence Types (ST); *Streptococcus pneumoniae*; West Indies.