

Abstract

Group A streptococcus (GAS) is one of important pathogens in human infections. There are many evidence suggested that the M protein plays as major virulence factor in the streptococcal infection. The serotype of M protein also correlates with the severity of disease. The M protein is responsible for the bacterium's capacity to resist phagocytosis. The coil-coil structure of M protein has their N-terminal ends protruding outwards from the cell. The hypervariable regions of N terminal are highly heterogeneous and encode for the serotype specificity used for the M-typing system developed by Dr. Lancefield in 1928. Currently, more than 100 M serotypes have been named. Producing type-specific M-typing antisera is difficult and specialized; so far M-typing antisera are not cover all known M serotypes; no attempt has ever been made to produce them commercially. In this proposal, M protein gene sequencing, and pulsed field gel electrophoresis (PFGE) were examined to determine the emm gene and chromosomal pattern of GAS from southern Taiwan.

A total of 143 clinical isolates of GAS collected in a university hospital. Twenty two PFGE patterns and 13 emm sequence types which included emm1, emm4, emm7, emm9, emm12, emm13, emm25, emm50, emm58, emm71, emm75, emm77 and emm PT180 were obtained. Harbored by 50.3% and 16.8 % of the 143 isolates, emm1 and emm12 were most common, while the emm types were rare. High proportions of the isolates associated necrotizing fasciitis, cellulites, bacteremia, scarlet fever and upper respiratory tract infection. The 73 emm1 isolates displayed 19 different PFGE patterns. One, nine and 21 PFGE patterns were found among the isolates associated with scarlet fever and upper respiratory tract infection. In addition A one PFGE pattern and twelve PFGE pattern were associated with cellulites. Eight isolates of necrotizing fasciitis were distributed in 3 emm types and 5 different PFGE patterns. The present study indicates genomic diversity among GAS isolates and major emm types were emm 1 and emm 12 in southern Taiwan.

Keywords : Group A streptococcus ; epidemiology ; Pulsed-Field gel electrophoresis typing