Molecular Typing of Methicillin – Resistant *Staphylococcus aureus* strains by Repetitive Element PCR Analysis and coagulase gene restriction profile.

L. Quelle, A. Corso, F. Buzzola, M. Galas, G. Lopez , D. Sordelli.

Background: Nosocomial infections caused by methicillin-resistant strains of *Staphylococcus aureus* (MRSA) have become an important clinical problem worldwide. Rapid and efficient epidemiologic typing systems would be useful to monitor and limiting the transmission of methicilin resistant *Staphylococcus aureus* (MRSA). The aim of the present study was to evaluate the performance and reproducibility of typing argentinian MRSA comparing three PCR based methods with *Sma*I macrorestriction analysis resolved by Pulsed field electrophoresis (PFGE) which is considered as the reference method for MRSA typing. **Methods:** A total of 25 MRSA isolates, which represent the Argentinian clones were selected from a collection of 148 strains that were previously characterized into distinct types by *Sma*I PFGE analysis at the Instituto de Tecnología Química e Biológica (ITQB). The reference strains *S. aureus* 8325 and the Iberian clone were also included in this study. These isolates were typed by two rep-PCR typing methods targeting IS 256 and *M. pneumoniae* repeat MP3 . The third method studied was the coagulase gene restriction profile (CRP) using the enzyme *Alu*I. The reproducibility was performed in quadruplicate by comparing patterns obtained of 10 isolates each representing a distinct PFGE type. Typeability was also calculated. **Results:** From the total isolates studied, PFGE showed 22 profiles. The two rep-PCR investigated, Inter 256 PCR and rep MP3 analysis, generated 10 and 11 profiles respectively and the coagulase gene restriction profiles identified only 6 CRP. Considering the discriminatory power (*D*) the best value (0.83) was obtained for Inter – IS 256 PCR that was comparable with the acquire for rep MP3 analysis (0.80) and the typeability for both methods was 100%. For CRP (*D)* couldn't be calculated because three isolates were nontypeable. Further discrimination was obtained considering the combination of the two rep-PCR typing method the *D* was 0.90 similarly to the observed to PFGE. The reproducibility of the three PCR based methods was 100%. **Conclusion:** On the basis of the results of this study rep-PCR based methods demonstrated a high discrimination power and reproducibility comparable with PFGE. Furthermore, these methods have the advantage of the rapidity and easy to perform. So we suggest the combination of these two techniques as a screening system for typing clones of MRSA.