EP181

ePoster Session

Testing MRSA

Polyhexanide MIC profiles after topical decolonization of methicillin-resistant *Staphylococcus aureus* (MRSA) carriage

A. Renzoni[1], C. Landelle[1], E. Von Dach[1], E. Bonetti[1], C. Manzano[1], J. Schrenzel[1], S. Harbarth[1], P. François[1]

[1]*HUG, Geneva, Switzerland*

Objectives

Due to increasing resistance of MRSA against decolonization agents such as mupirocin and chlorhexidine, there is an urgent need for the development of alternative molecules. The aim of this study was to determine the polyhexanide MIC profiles of MRSA clinical isolates obtained after *in vivo* polyhexanide (Prontoderm®) decolonization treatment and to determine the emergence of *in vitro* resistance to polyhexanide.

Methods

A collection of 54 MRSA strains collected from patients colonized with MRSA without active MRSA infection were obtained from a randomized, placebo-controlled study performed at our institution. Patients were treated with polyhexanide for 10 days and screened for MRSA carriage at day 2 and day 28 following decolonization. Selected strains at day 0 (D0) and 28 days (D28) after polyhexanide decolonization were subjected to molecular genotyping and macrodilution MIC determinations against chlorhexidine and polyhexanide. In addition, we assessed the *in vitro* emergence of resistance to polyhexanide and chlorhexidine by stepwise exposure in broth culture.

Results

Genotyping showed a clonal relationship between D0 and D28 isolates, suggesting no recolonization at D28 with an exogeneous MRSA isolate. The level of resistance against polyhexanide and chlorhexidine of clinical MRSA in our collection was moderate, around 0.5-1 µg/ml and 0.5-4 µg/ml, respectively. The majority of D28 isolates showed a similar resistance level against chlorhexidine or polyhexanide compared to their respective D0 parental strain. No correlation between chlorhexidine and polyhexanide MIC values was observed. Stepwise prolonged exposure of a model MRSA isolate to increasing concentrations of polyhexanide resulted in decreased susceptibility (MIC increase from 0.25 to 2 µg/ml). Further exposition was maintained but no evolution in MIC was observed above 2 µg/ml. Exposure to chlorhexidine resulted also in decreased susceptibility to the drug (from 2 µg/ml to 8 µg/ml). No cross-resistance between the two antiseptics was observed in these *in vitro* derived strains.

Conclusion

Polyhexanide topical decontamination did not select for emergence of polyhexanide-resistant MRSA or lead to altered susceptibility. MRSA strains showing the highest chlorhexidine MICs remained highly susceptible to polyhexanide. Overall, the absence of inducible resistance to polyhexanide in MRSA and the limited options of decolonizing agents suggest that polyhexanide may represent a valuable alternative for *S. aureus* decolonization in the presence of resistance to other topical antiseptics.