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P2631 Susceptibility to chlorhexidine of *Klebsiella pneumoniae* strains: KPC producers and potential role of efflux pumps

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Background: Chlorhexidine gluconoate is a chemical synthesis disinfectant with antiseptic action. The aim of the study was to assess the sensitivity of the bactericidal / bacteriostatic effect of chlorhexidine gluconate on strains of *K. pneumoniae* multiresistant producers of carbapenemases isolated at the service of Microbiology from purulent materials of the Verona AOUI.

Materials/methods: 30 strains of *K. pneumoniae* multi-resistant KPC producers were used for this study, of which 7 also resistant to colistin. On these strains the sensitivity to chlorhexidine 0.05% and to 7 other antibiotics (imipenem, meropenem, colistin, ciprofloxacin, levofloxacin, amikacin and gentamicin) was determined by micro-dilution. The MIC value for chlorhexidine and fluoroquinolones was also determined in the presence of CCCP (bacterial efflux pump inhibitor). Finally, on a colistin-resistant strain and on a colistin-sensitive strain the effect of chlorhexidine was also assessed through setting up of the death curve, testing the disinfectant at different concentrations (0.05% - 0.0125% - 0.003125%).

Results: the 30 strains tested were all sensitive to chlorhexidine 0.05% with MIC values ≤ 0.00625µg / ml. Regarding the antibiotics tested with the addition of CCCP, the chlorhexidine MIC is lower than minimum 3 dilutions compared to the MIC without pump inhibitor; instead, as regards the fluoroquinolones, the MIC with CCCP is equal to or less than 1-2 dilutions compared to the MIC without the addition of the pump inhibitor. Regarding the death curve tested, chlorhexidine proved to be effective at the concentration in which it is routinely used in a hospital environment for washing patients (0.05%)

Conclusions: In the absence of new antibiotic therapies, prevention of spreading of carbapenemase producer strains is fundamental, also through the disinfection of the skin and the washing of the patient. Chlorhexidine gluconate at 0.05% concentration was effective in inhibiting in vitro the growth of KPC producer strains, both colistin sensitive and resistant. The sensitivity to chlorhexidine varies in the presence of an inhibitor of efflux pumps such as CCCP, suggesting that an over-expression of the pumps involved in the elimination of chlorhexidine may lead to an increase in resistance to this disinfectant.