

Efficacy of Quinipristin / Dalfopristin and Daptomycin in Vancomycin and High Level Gentamicin Resistant Enterococci: an Agenda for the Future

Alka Hasani^{*1}; Yaeghob Sharifi²; Reza Ghotaslou¹; Akbar Hasani¹; Mohammad Aghazadeh¹; Morteza Milani³; Ahad Bazmani⁴

1-Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

2- Urumieh University of Medical Sciences; Urumieh, Iran

3- Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

4-Research Center of Infectious Diseases and Tropical Medicine, Faculty of Medicine, Tabriz University of Medical Science, Tabriz, Iran

dr.alkahasani@gmail.com

Background & Objectives: The rapid emergence and growing incidence of vancomycin (VRE) and high level gentamicin (HLGR) resistant enterococci worldwide, including Iran has become a serious concern. In order to contribute the challenges new therapeutic options were evaluated.

Methods: A total of 220 strains of Enterococci identified and speciated by conventional Methods were subjected to multiplex PCR for the presence of genus and species specific targets and genes encoding vancomycin-and gentamicin resistance determinants, namely vanA and vanB alongwithaac (6')-Ie-aph(2'')-Ia, aph(2'')-Ib, aph(2'')-Ic, aph(2'')-Id, respectively, followed by MICs of vancomycin, gentamicin, daptomycin and quinopristin/dalfopristin, by E-test (BioMerieux SA) for all VRE and HLGR strains.

Results: Among the isolated enterococci, 152 and 68 were *E. faecalis* and *E. faecium*, respectively, major source being urine (85.8%). Totally, 45 (20.45%) strains were resistant to vancomycin and among these, 44 isolates possessing MICs \geq 256 μ g/ml. Forty three VRE strains were vanA positive. vanB was detected in three VSE isolates. In total, 133(60.45%) isolates revealed high level resistance to gentamicin with MICs \geq 512 μ g/ml. Forty three HLGR isolates presented simultaneous resistance to vancomycin. Of ten VRE and HLGR *E. faecalis* strains, one showed quinipristin / dalfopristin MIC \leq 1.5 μ g/ml, while nine strains possessed high resistance (MIC \geq 32 μ g/ml). Daptomycin MIC ranged from 0.50- 6 μ g/ml and except one *E. faecium* strain (MIC \geq 6 μ g/ml), all strains were found sensitive to this antibiotic, irrespective of the species.

Conclusion: VRE and HLGR were due to the presence of the vanA and aac(6')Ie-aph(2'')Ia genes respectively. High incidence of HLGR strains negate may synergism between aminoglycoside in combination with a cell-wall active antibiotic. Daptomycin appeared to be good treatment choice, while quinipristin – dalfopristin resistance prior to exposure is a concern.

Keywords: Enterococci; VRE; HLGR; Quinipristin- Dalfopristin; Daptomycin