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Abstract (publication only)

Resistance among Staphylococcus aureus to macrolide, lincosamide and streptogramin B (MLSB) antibiotics: results from a Greek multicentre study during 2011

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Objectives: To study the prevalence and molecular basis of resistance among Staphylococcus aureus in MLSB antibiotics (macrolides, lincosamides, streptogramins B) in Greece during 2011. Methods: A total of 1423 consecutively S. aureus isolates were collected during 2011 from various clinical specimens in three tertiary care hospitals located in Larissa, Athens, and Patra (northern, central and southwestern Greece). Identification and susceptibility testing was performed by the automated Vitek II System (BioMerieux, France). Double disk synergy was performed so as to distinguish M, L and MLSB inducible phenotypes. The isolates were tested for the presence of erm, msrA, lnu vat and vga gene by PCR. The genetic relatedness of isolates was determined by PFGE and MLST. Results: Among 607 S. aureus (279 MRSA and 328 MSSA) originated from Larissa, 194 exhibited resistance to erythromycin (32%) and 183 to clindamycin (30%). In more details, 90 MRSA and 29 MSSA exhibited MLSB constitutive phenotype, 25 MRSA and 39 MSSA exhibited MLSB inducible phenotype, 11 MRSA exhibited M phenotype and 2 MSSA exhibited L phenotype. Among 505 S. aureus (337 MRSA and 168 MSSA) originated from Athens, 126 exhibited resistance to erythromycin (25%) and 116 to clindamycin (23%). In more details, 73 MRSA and 11 MSSA exhibited MLSB constitutive phenotype, 11 MRSA and 21 MSSA exhibited MLSB inducible phenotype, 10 MSSA exhibited M phenotype. Among 311 S. aureus (131 MRSA and 180 MSSA) from Patra, only 34 MRSA were resistant to erythromycin (10.9%); 24, 32 and 6 exhibited MLSB inducible, MLSB constitutive and M phenotypes respectively. The ermA and ermC genes correlated with MLSB phenotype, either inducible or constitutive; with ermA being the predominant gene (64%), while the lnuB and msrA genes correlated with L-phenotype (0.4%) and M phenotype (2%) respectively. Molecular typing revealed that the majority of erythromycin-resistant MRSA belonged to ST239 and ST80 that predominate in our institutions. Conclusions: Significant differences on the resistance rates to MLSB antibiotics were observed among northern, central and southwestern Greece. In northern Greece, the resistance rate dramatically increased from 16.4% in 2000 to 32% in 2011, a result that partially could be explained by the extensive usage of clindamycin to treat soft and skin staphylococcal infections.