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Poster Session II

Molecular diagnostic methods in bacteriology - miscellaneous

MOLECULAR IDENTIFICATION AND SUSCEPTIBILITIES OF NOCARDIA CLINICAL STRAINS

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Objectives. Species of genus *Nocardia* are opportunistic pathogens that cause pulmonary, disseminated or subcutaneous infections among immunocompromised or previously healthy individuals. Over the last years there has been an increasing interest in the taxonomy and susceptibility patterns of clinical isolates. The present study pursued molecular identification and defined antimicrobial susceptibility of *Nocardia* species strains isolated or submitted for testing at a 700-bed tertiary health care center in Athens during a four year period.

Material and methods. All consecutive isolates (33 strains) obtained during 2010-2013 and belonging to *Nocardia* species as per phenotypic testing were included in the study. Twenty-two strains were isolated at 'Attikon' University Hospital. Additionally, 11 strains were submitted for identification from other hospitals, mostly in Athens. Definitive identification was determined by PCR-RFLP of the hsp65 gene (440 bp) and sequencing of the 16S rRNA gene (600 bp). Susceptibility testing to eight antimicrobials was performed by standard CLSI broth microdilution method using a commercial assay (RAPMYCOI, TREK Diagnostic systems). Clinical data were recorded when available.

Results. Among 33 unique *Nocardia* strains, the majority were recovered from sputum (28) followed by pus (4) and peripheral blood (1) cultures. Clinical data were available for 26 patients. All of them presented with immunosuppression and isolation was considered clinically important. Ten species were identified: *N. cyriacigeorgica* (12 strains; 36.4%), *N. nova* (4), *N. carnea* (3), *N. abscessus* (3), *N. brasiliensis* (2), *N. farcinica* (2), *N. flavorosea* (1), *N. otitidiscaviarum* (1), *N. veterana* (1), and *N. paucivorans* (1), while 3 isolates remained unidentified (one strain exhibited 98.1% homology of 16S rRNA gene with *N. mexicana*, another 99.4% with *N. flavorosea* and another 99.5% with *N. carnea*). Notably, the uncommon species isolate of *N. veterana* was isolated from a blood culture. In total, susceptibility testing showed susceptibility to trimethoprim-sulfamethoxazole 91%, linezolid 100%, amikacin 97%, ceftriaxone 85% and resistance to amoxicillin-clavulanate 66.7%, ciprofloxacin 69.7%, clarithromycin 63.6% and imipenem 42.4%. An unusually high imipenem resistance rate (75%) was detected among isolates of *N. cyriacigeorgica*. Resistance to trimethoprim-sulfamethoxazole was restricted to the species *N. carnea* (2/3 strains) and one unidentified species strain.

Conclusion. This report on *Nocardia* spp. isolation reveals that despite the limited number of strains, a broad spectrum of species was identified, with *N. cyriacigeorgica* representing the most common pathogen. Species diversity and species-associated resistance indicate the necessity of routine molecular identification as well as antimicrobial susceptibility testing in order to treat nocardial infections efficiently.