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Abstract (publication only)

Detection of aminoglycoside-resistance genes among multidrug-resistant clinical isolates of *Acinetobacter baumannii* from Krakow, Poland

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Objectives: *Acinetobacter baumannii* is an increasingly important nosocomial pathogen often causing outbreaks in hospital environment. Many clinical isolates are resistant to almost all antibiotics including aminoglycosides. Inactivation of these antimicrobial agents by enzymatic modifications is the main mechanism. Different types of aminoglycoside acetyltransferases (ACC), nucleotidyltransferases (ANT) and phosphotransferases (APH) are synthesized by clinical isolates of *A. baumannii*. The aim of the study was detection of selected ACC and APH encoding genes. **Methods:** The study included the total of thirty nine strains of multidrug-resistant *A. baumannii*. These isolates were obtained from patients hospitalized in Specialized Hospital in Krakow between 2005 and 2010. *A. baumannii* identification and susceptibility testing (Vitek-2 Compact, bioMérieux, Poland) were performed by standard criteria (CLSI). PCR detection of genes encoding: AAC (6')-Ih, AAC (3)-Ia, AAC (3)-IIa, AAC (6')-Ib, APH (3')-Ia and APH (3')-VI used in this study was described by Noppe-Leclercq et al. (1999) and Nemeč et al. (2004). **Results:** PCR analysis showed the occurrence of at least one of the following aminoglycoside-resistance genes in 97,4% (38) strains: aph(3')-VI (66,7%; 26), aac(3)-Ia (64,1%; 25), aph(3')-Ia (43,6%; 17), aac(3)-IIa (15,4%; 6), aac(6')-Ih (10,3%; 4) and aac(6')-Ib (5,1%; 2). A combination of two to four different resistance genes was observed in 66,7% (26) of strains, with a total of 8 different combinations. Among analysed isolates the most frequent combination was: aac(3)-Ia + aph(3')-VI (18%; 7), and the least frequent combinations were: aac(3)-Ia + aac(3)-IIa and aac(6')-Ib + aph(3')-Ia + aph(3')-VI (2,6%; 1). **Conclusions:** Our results support that: 1) aminoglycoside-resistance in *A. baumannii* strains might be associated with the production of aminoglycoside-modifying enzymes, 2) aminoglycoside-resistant strains frequently contain more than one aminoglycoside resistance gene.