

Dissemination of structurally related class I integrons among *Acinetobacter baumannii* clones

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Objectives. To investigate the relationships between aminoglycoside resistance genes and class 1 integrons and clonality of multiresistant *A. baumannii* strains from the Czech Republic.

Methods. Seventy epidemiologically unrelated multiresistant strains of *A. baumannii* isolated in Czech hospitals between 1991 and 2002, 13 reference strains of epidemic clones I and II from NW Europe (Dijkshoorn L *et al.* J Clin Microbiol 1996; 34: 1519-25) and a control group of 15 susceptible Czech strains were investigated. The strains were studied by AFLP fingerprinting and *Hind*III/*Hinc*II ribotyping and screened for the presence of 7 aminoglycoside resistance genes and class 1 integrons by PCR. PCR mapping was used to study the content and order of integron-associated gene cassettes.

Results. AFLP fingerprinting and ribotyping classified the Czech multiresistant strains into clone I ($n=41$), clone II ($n=21$) and a heterogeneous group of other strains ($n=8$). The susceptible strains had heterogeneous genotypes distinct from those of clone I or clone II. Aminoglycoside resistance genes *aac(3)-Ia*, *aph(3')-Ia*, *aph(3')-VIa*, *ant(2'')-Ia* and *ant(3'')-Ia* were present in 13 different combinations, some of which were found in both clones. Class 1 integrons were detected in most clone I and clone II strains and were classified into two types according to size (3.0 kb and 2.5 kb) and structure of their internal variable regions. The two integron types contained *aac(3)-Ia* and *ant(3'')-Ia* cassettes and were structurally highly related to each other as indicated by the restriction endonuclease patterns and positions of gene cassettes. The integrons of the two types were found both in clone I and clone II strains including Czech and NW European strains.

Conclusions. The Czech multiresistant *A. baumannii* strains belonged almost exclusively to the two clonal lineages previously recognized in a set of strains from NW European hospitals. Both the intracolon diversity of aminoglycoside resistance genes and the presence of the same resistance genes and integron structures in clonally distinct strains are indicative of horizontal gene transfer. The data suggest that the structure of the integrons remains stable over a long period of time.