Initial Pseudomonas aeruginosa infection in patients with cystic fibrosis: characteristics of eradicated and persistent isolates

Despite intensive eradication therapy, some CF patients with early Pseudomonas aeruginosa infection rapidly develop a chronic infection. To elucidate factors associated with this persistence, bacterial characteristics of early P. aeruginosa isolates were analysed that were either eradicated rapidly or persisted despite multiple antimicrobial treatments. Eighty-six early infection episodes were studied. First P. aeruginosa isolates from patients with eradication (36) or persistent infection (16) were included; isolates from patients with intermittent infection (34) were omitted from the study. Virulence assays, antimicrobial resistance, cytotoxicity and mutation frequencies were analysed in vitro. P. aeruginosa was genotyped by SNP-array. Transcriptomic profiles of two eradicated and two persistent strains were compared. Nineteen per cent of patients developed persistent infection; 42% achieved eradication. Secrecion of virulence factors and mutation frequencies were highly variable among both eradicated and persistent isolates and were not different between the groups. Cytotoxicity was present in 57% of eradicated vs. 100% of persistent isolates.