Abstract

Achromobacter spp. is an emerging pathogen, especially in chronic respiratory infections in patients with cystic fibrosis. MALDI-TOF mass spectrometry provides reliable identification only at the genus level. The *nrdA* gene sequence is used for species identification of representatives. Clonality studies using multilocus sequence typing can determine whether a patient is still infected with the same clone or whether reinfection with a new strain occurs over time. Time-collected isolates of *Achromobacter* spp. from patients with cystic fibrosis were included in our study. Patients were divided into three groups according to the time interval between collections. In the first group, the external interval between collections was approximately 10 years, in the second group 7 to 12 months, and the remaining group consisted of single isolates. In the course of chronic infection, *Achromobacter* spp. adapt to the exposed antibiotics and to the host. Isolates sampled at an interval of 10 years showed a higher number of mutations than isolates with a sampling interval of up to one year. During chronic infection, loss of motility occurs, which we demonstrated phenotypically at the level of motility, reduction in flagella number and changes in flagellar genes. Increased resistance was observed in some isolates by disc diffusion screening method. With the increasing isolation of *Achromobacter* spp. from clinical material and due to its inherent multidrug resistance, there is a growing need of understanding this bacterium and the associated search for effective treatment options.

Keywords: multidrug resistance; cystic fibrosis; chronic infection; *Achromobacter*; motility; NGS