Changes in antimicrobial susceptibility in adult CF patients with chronic *Pseudomonas aeruginosa* infection treated with daily inhalation of tobramycin or colistin

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**Objectives:** Inhalation of antibiotics is a standard treatment for chronic infection with *Pseudomonas aeruginosa* (PA) in patients with cystic fibrosis (CF). Inhalation on alternate months is thought to prevent the emerging of resistance of PA for tobramycin. Tobramycin for inhalation is prescribed in our centre for continuous use >10 years. We hypothesize that this treatment does not alter susceptibility of PA to tobramycin.

**Methods:** In this prospective study with retrospective control measurements we collected sputum samples over 3 to 5 years from 60 CF patients, treated with tobramycin or colistin inhalation therapy, with chronic PA infection. Using high-range Etest® strips susceptibility of PA was tested. The MENSURA criteria are applied for predicting the susceptibility to tobramycin.

**Results:** In 48 patients susceptibility testing for tobramycin is completed and in 47 patients for colistin. Within these patients 22 patients used tobramycin, 26 used colistin. Results were categorised in susceptible, intermediate, or resistant. For tobramycin-users in 16 patients susceptibility did not change, 4 cases changed from susceptible to intermediate (1) or resistant (3), in 2 patients susceptibility changed from resistant to susceptible. The likelihood for the susceptibility to remain unchanged or change to susceptible is 82% (95% CI: 0.66–0.98). Analysing MIC<sub>tohr</sub> in tobramycin-users showed no significant change of MIC<sub>tohr</sub> with p=0.076. Within the 26 patients using colistin, no changes in susceptibility for colistin were observed.

**Conclusion:** In this study we could establish that continuous inhalation of tobramycin does not lead to increased resistance of PA.

The impact of viral symptoms on rhinovirus positive pulmonary exacerbations in patients with CF

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**Objectives:** We have recently demonstrated that human rhinovirus (HRV) is associated with more severe pulmonary exacerbations with greater falls in lung function and higher inflammatory response. Asymptomatic viral carriage is common in the general population and we aimed to establish whether the presence or absence of viral symptoms affected exacerbation severity.

**Methods:** The study group comprised 104 patients who had previously been identified as HRV PCR positive exacerbations between Dec 2008 and May 2011. Their electronic records were reviewed to establish the number of patients who had presented with viral symptoms at the time when the sample was obtained. Clinical data was collected to assess the severity of each exacerbation.

**Results:** 53 of the 104 patients had viral symptoms when the swab was taken. No significant differences were seen between the patients with viral symptoms and those that were asymptomatic. Specifically no differences were seen in treatment length, inflammatory markers, recovery of lung function, and the time to next exacerbation.

**Conclusion:** The identification of HRV during an exacerbation is detrimental to the patient irrespective of viral symptoms.

Inhaled antibiotics and *Candida albicans* chronic colonization in cystic fibrosis

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**Objectives:** *Candida albicans* has been recently recognized as clinically significant microorganism colonizing the respiratory system in cystic fibrosis (CF) patients. The aim of this study was to investigate the association between inhaled antibiotics and *C. albicans* chronic colonization in CF patients.

**Methods:** A retrospective cohort study of children with CF born from 1988 to 1996 was performed. Their medical records were reviewed from the first time they attended the CF Center until December 2010. Outcomes were either the occurrence of *C. albicans* chronic colonization or their last visit at the CF Center. Chronic colonization was defined as the presence of *C. albicans* in more than 50% of cultures in a given year. A number of possible confounders such as follow-up period, BMI, pancreatic insufficiency, duration of inhaled antibiotic treatment, duration of inhaled corticosteroid treatment and duration of azithromycin treatment were included in the multivariate logistic regression analysis in order to identify an independent association between inhaled antibiotics and *C. albicans* chronic colonization.

**Results:** At total, 121 patients were included in the study and 54 (44.6%) developed chronic colonization during the study period. Multivariate logistic regression analysis determined the independent effect of inhaled antibiotic treatment on the odds of chronic colonization (OR 1.112, 95%CI 1.007–1.229, p = 0.036). Moreover, the role of Body Mass Index (BMI) and azithromycin treatment had a tendency toward significance after adjustment for confounders.

**Conclusion:** The duration of inhaled antibiotic treatment is associated with *C. albicans* chronic colonization in CF patients.