

93 Infection control in cystic fibrosis: assessment of *Pseudomonas aeruginosa* genotypes isolated from Italian children patients

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Objectives: Chronic pulmonary infection with *P. aeruginosa* (PA) is responsible for significant morbidity and mortality in Cystic Fibrosis (CF). The means of transmission of PA in CF affected patients have not been clearly established. Many CF patients appear to acquire the organisms from the natural environment and not from other CF patients. The 29% of CF patients acquired nonmucoid PA in the first 6 months of life. The aim of this study is to assess the genotypes of first PA isolated from Italian children patients attending contemporary Genoa CF center to understand the type of acquisition/transmission.

Methods: The PA strains isolated of 28 young patients (range of age: 2 months-3 years) attending CF Genoa center were analysed and compared with PA recovered from other CFGenoa patients and 55 environmental strains (11 from hospital sinks, 44 from swimming pool and mineral water) by BOX-PCR A PA panel control strains included: PA01, ATCC 27853, European clone C (EC), Manchester Epidemic Strain (MES) and Liverpool Epidemic Strain (LES). The cluster analysis was performed by "Gel Compar II".

Results: The molecular profiles of 28 children patients are not correlated. The comparison with other CF clinical, environmental and epidemic strains didn't show any genotypes correlated.

Conclusion: Environmental acquisition was not documented. The molecular profile suggests that person-to-person transmission not occurred but it's need of continuous survey, in the help of the infection control measures.

95 Susceptibility testing of isolates of *Pseudomonas aeruginosa* in patients with cystic fibrosis – Service evaluation

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Objectives: *Pseudomonas aeruginosa* is a common isolate in CF patients. Routine susceptibility testing of these organisms has been shown to have a high variability between laboratories, and within the same laboratory. A poor correlation between susceptibility results and clinical response has been shown. The Cystic Fibrosis Trust now states that the omission of susceptibility testing for these isolates can be clinically justified. Currently in our laboratory susceptibility testing is performed monthly. The aim of this study was to investigate the impact of the results on patient management.

Methods: The laboratory results and antibiotic treatment were reviewed for patients in whom *P. aeruginosa* was isolated, using the databases of the laboratory and the CF team, over the period of one year.

Results: 320 specimens from 54 patients were reviewed. Susceptibility testing was done for 252 specimens (78.8%). There were 255 treatment episodes, in 116 a susceptibility result was available. In 37 episodes (32%) none of the antibiotics used were in retrospect found to be active by susceptibility testing, in 14 (38%) treatment was changed, in nine (24%) due to an allergic reaction, in four (11%) because of a lack of clinical improvement, in one (3%) due to the susceptibility testing. In four cases a different antibiotic regimen was used in the next treatment episode, which was active according to the previous susceptibility profile.

Conclusion: The impact of susceptibility testing on the choice of antibiotic was small. In accordance with the recommendations from the Cystic Fibrosis Trust it seems safe and appropriate to reduce the frequency of susceptibility testing to 3 monthly.

94 The effect of *Pseudomonas aeruginosa* infection on pulmonary function outcome in a cohort of patients with nonsense mutation cystic fibrosis

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Objectives: Limited natural history data are available in the subpopulation of patients with CF due to nonsense mutations (nmCF). Longitudinal data from the placebo group of a 48-week Phase 3 clinical trial of the investigational new drug, ataluren, are provided to understand the influence of *P. aeruginosa* (PA) infection in nmCF patients.

Methods: Eligibility criteria included age ≥ 6 years, sweat chloride >40 mEq/L, FEV₁ $\geq 40\%$ and $\leq 90\%$ of predicted in patients with nmCF. Outcome measures included spirometry and pulmonary exacerbation rate.

Results: 103 patients completed 48 weeks of blinded study treatment and had a valid Week 48 spirometry measurement. PA status was determined from clinical history reports. 45 (44%) of patients had a history of PA infection, 69% of whom used inhaled antibiotics. Mean age was 23.2 years [SD=9.1] and mean baseline % predicted FEV₁ was 60.5 [SD=15.1], declining to 56.3 [SD=16.6] in those with a history of PA. In those without a history of PA, 48% used inhaled antibiotics, mean age was 24.5 years [SD=9.8] and mean baseline % predicted FEV₁ was 60.1 [SD=15.2], declining to 56.3 [SD=16.9]. Over 48 weeks, the pulmonary exacerbation rate was 1.83 [CI=1.19–2.47] for patients with a history of PA and 1.79 [CI=1.04–1.98] for those without.

Conclusion: Data from the placebo arm of an international study of ataluren suggest there is no difference between PA positive and negative status on FEV₁ decrement or pulmonary exacerbation rate in nmCF patients over 1 year, with a significant proportion of PA negative patients using chronic inhaled antibiotics. Interpretation of these results is limited by the retrospectively defined nature of PA infection.

96 *Staphylococcus aureus* in Czech cystic fibrosis patients – prospective study

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Objectives: The aim of this study was to characterize *S. aureus* isolates from patients of Prague Cystic Fibrosis Centre.

Methods: Altogether, 242 respiratory isolates of *S. aureus* from 105 patients with CF were collected in 2011–2012. The isolates were typed by PFGE and screened for susceptibility to antibiotics and presence of resistance and virulence genes. Small colony variants (SCV) were identified and tested for auxotrophy.

Results: Total of 142/58 (isolates/patients) were resistant to MLSb antibiotics (Macrolides-Lincosamides-Streptogramin B), 25/13 were resistant to aminoglycosides and 6/5 were MRSA. MLSb resistance was associated with genes from *erm* family or *msrA* gene. Isolates resistant to aminoglycosides harboured *aadC*, *aphA3* or *aac-aphD* gene. *mecA* gene was detected in all of 6 MRSA isolates.

Most frequent virulence genes detected in the isolates (n=242) were genes for enterotoxins seg (n=137), sei (n=128), sec (n=38), sea (n=19), sej (n=15) and seh (n=18). Other virulence genes were not found or found sporadically. Isolates with SCV phenotype (n=19), all thymidine auxotrophs, were isolated in 9 patients. Isolates were separated in to the 39 different pulsotypes by PFGE with two dominant pulsotypes of 61 isolates from 27 patient (26%) and 28 isolates from 10 patients (12%) respectively.

Conclusion: This was the first study focussing on *S. aureus* isolates from patients with CF in the Czech Republic. Our results show high prevalence of MLSb resistance (55%). Prevalence of SCV isolates was about 9%.

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