

178 Does nasal and bronchial nitric oxide in CF correlate to pathogen colonization in both airway levels?

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Objectives: Nitric oxide (NO) is produced within the respiratory tract and can be detected in exhaled bronchial and nasal air with correlation to specific diseases (elevated in asthma/bronchiectasis, decreased in ciliar dysfunction). NO in paranasal sinuses is considered as location-specific first line defense mechanism. In CF, NO levels are reported divergently as low or normal. Aim of this study was to investigate correlation of upper and lower airway NO levels to pathogen colonization, clinics and blood inflammatory parameters.

Methods: From 57 CF patients nasal and bronchial NO was correlated to pathogen colonization of the upper and lower airways and clinical parameters. Airway microbiology was preferably assessed by nasal lavage using 10 ml NaCl 0.9% per nasal side and sputum sampling.

Results: Nasal and bronchial NO levels were significantly correlated to each other, but not to specific pathogen colonization. In patients receiving azithromycin, a tendency to reduced NO could be found. Interestingly, a significant inverse correlation between C-reactive protein and leucocytes and nasal NO was found. In contrast, bronchial NO levels showed no correlation to clinical parameters, lung function, body mass index, or inflammatory parameters.

Conclusion: Assessment of nasal and bronchial NO levels can contribute to understand pathogen defense mechanisms in both airway levels in CF and other diseases, and for its non-invasiveness, it allows repeated controls. Supposing NO (in particular in the paranasal sinus) is part of first line defense mechanism against pathogens, further research may help preventing early colonization and improve therapy options and outcome in CF.

179 Early eradication of *Pseudomonas aeruginosa* (PA) in cystic fibrosis patients (CF): Which is the better treatment?

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CF patients usually have an intermittent period of PA infection before they become chronically infected. To date, there is no clearly identified which is the best practice for early treatment of PA infection.

Objective: To compare two different eradication treatments against initial PA infection.

Methods: Observational, analytic and retrospective cohort study. Clinical reports from patients assisted at our Center were reviewed and those with first acquisition of PA between 1997 and 2011 were included. Age at first acquisition, gender, and genetics were considered. Two types of treatment were indicated: Group1: Oral ciprofloxacin plus inhaled colistin for three months or Group 2: Intravenous Ceftazidime plus amikacin during 14 days. Time to recurrence of PA, eradication treatment rate (six months free of PA or more) and effective treatment (at least one culture negative after treatment) were the analyzed variables. Kaplan Meier curves were performed.

Results: 26 patients (15 males) in group 1 and 39 patients (24 males) in group 2 were included. The median age (interquartile range) at first acquisition was 1.8 years (0.6 to 4.2) and 0.8 years (0.3 to 1.7) for group 1 and 2, respectively (NS). 67% and 62% of the patients had p.F508 del mutation in each group (NS). The median time to recurrence was 13 months (3.2 to 24) in group 1 and 5 months (0 to 11) in group 2 ($p < 0.01$). Effective treatment and eradication treatment were 81% vs. 69% (NS) and 69% vs. 48% (NS) for group 1 and 2, respectively.

Conclusion: In our study, oral ciprofloxacin plus inhaled colistin was a better option than intravenous Ceftazidime plus amikacin for the treatment of the early PA infection.

180 *Pseudomonas aeruginosa* colonization of the respiratory tract in cystic fibrosis

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Introduction: Patients with cystic fibrosis (CF) are susceptible to lower respiratory tract infections with *Pseudomonas aeruginosa* (PA). Once infection is established progressive lung disease often worsens morbidity and mortality risks.

Objectives: To characterize PA colonization in our population and evaluate how lung function and nutritional status change over time.

Methods: Retrospective clinical review of CF patients followed in the paediatric units of 2 level III hospitals in the north of Portugal. Evaluated variables: age of diagnosis, genotype, body mass index (BMI) and FEV₁. PA colonization categories: never grown, free (last year); intermittent (<2 positive cultures last year); chronic (≥ 2 positive cultures last year). Deceased patients were excluded.

Results: Seventy-one patients were included. The prevalence of PA positive respiratory cultures was 59.2%; 60.5% were females ($p > 0.05$). PA colonization was chronic in 26.2%, intermittent in 31.0% and free in 42.9%. Colonization was higher (74.1% vs. 50.0%) when the diagnosis of CF was made in the first 6 months of life ($p = 0.045$) with a median age at diagnosis of 0.75 (0.08–15.01) vs. 2.58 (0–14.0) years ($p = 0.020$). Delta F508 homozygotes were more frequently colonized than other genotypes (73.0% vs. 44.1%; $p = 0.013$). Culture-positive patients also had a lower FEV₁ (69.7 ± 25.2 vs. 72.2 ± 28.3 ; $p > 0.05$) and a lower BMI at diagnosis (15.02 ± 3.08 vs. 15.92 ± 2.07 kg/m²; $p > 0.05$).

Conclusion: The prevalence of PA colonization in our sample was significantly related with an early age at diagnosis and delta F508 genotype, and it seemed to correlate with poorer nutritional status and lung function decline.

181 The use of a rationalised antibiotic susceptibility testing protocol for children with cystic fibrosis and chronic *Pseudomonas aeruginosa* infection

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Introduction: *Pseudomonas aeruginosa* (PA) establishes chronic infection in patients with CF and is associated with pulmonary exacerbations (PE). A previous audit found no association between *in vitro* antibiotic susceptibility and clinical outcome. As a result we rationalised susceptibility testing for children with chronic PA infection.

Methods: A 25-month retrospective case-note audit of 55 patients attending the Nottingham Paediatric CF unit, who have had PA isolated, examined data from the period pre- and post-protocol change. Courses of IV antibiotics, clinical outcomes, microbiology results and factors affecting recovery from PE were identified; regression and economic analyses were undertaken.

Results: No difference in clinical outcomes for patients with PA infection was identified following the rationalisation of testing. The new protocol was followed on 64% of occasions, resulting in possible savings of 58.1% (£207) in 9 months. Factors identified as affecting the success of treatment were BMI before treatment; age on admission; genotype; chronic oral antibiotics; courses of IV antibiotics completed at home; and semi-elective, compared to symptomatic, admissions. When multiple samples were taken on the same day, 70.8% ($n = 17$) were found to be non-concordant. The negative predictive value of cough swabs was 30.8%.

Conclusions: This is the first analysis of the rationalised protocol at the unit. The rationalised protocol appears to have had no effect upon clinical outcome but has reduced the cost of testing. Previous findings of poor predictability of cough swab samples are replicated and some factors predictive of treatment failure are identified.