82* Increasing levels of precipitating antibodies to *Achromobacter xylosoxidans* and *Burkholderia multivorans* reflect more aggressive pulmonary disease in chronically infected Cystic Fibrosis patients

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Introduction: Absolute level and rapidly increasing levels of precipitating antibodies to *Pseudomonas aeruginosa* (PA) in chronic pulmonary infection in cystic fibrosis (CF) are correlated with degree of lung inflammation, tissue damage and poor prognosis. Precipitating antibodies to other Gram-negative bacteria may exhibit similar properties.
Aims: To assess the correlation between levels of precipitins to *Achromobacter xylosoxidans* (AX), and *Burkholderia multivorans* (BM) and lung function in chronically infected CF patients.
Methods: All patients with a diagnosis of chronic infection with either AX or BM as per 2005 were included. The correlation between level of precipitating antibodies and FEV1% predicted was assessed.
Results: 14 patients with chronic AX had median (range) FEV1% predicted of 66% (23 to 111%) and precipitin levels of 25 (3 to 40) showing statistically significant, but weak, negative correlation ($r2 = 0.24$, $p < 0.05$). Correspondingly, in 12 patients with chronic BM a statistically significant negative correlation ($r2 = 0.65$, $p < 0.05$) was shown between lung function: 63% (40 to 110%) and precipitin levels: 17 (8 to 25).
Conclusion: Chronic infection with AX or BM, like PA, induces increasing levels of precipitins as markers of enhanced tissue damage as reflected in declining lung function. Precipitins to other Gram-negative bacteria than PA may function as markers of infection severity, treatment success or failure.

83 Exopolysaccharide production in the *Burkholderia cepacia* in response to growth on onion agar

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Aims: To investigate phenotypic responses to growth of the *Burkholderia cepacia* complex (Bcc) on agar medium containing onion extract.
Methods: A panel of Bcc strains was cultured for 4 days at 30°C on bacteriological agar containing homogenised onion extract as the sole nutrient. Bacterial exopolysacharide (EPS) was extracted and analysed for similarity to the previously described Bcc EPS, Cepacian. SDS-PAGE analysis, ethyl acetate partition, paper electrophoresis, mass spectrometry and NMR were used to investigate the causative factor in the onion extract.
Results: Unexpectedly, around 50% of previously "nonmucoid" Bcc strains produced a copious mucoid colonial phenotype on onion agar. The degree of mucoidy was particularly striking in *B. cepacia* strain ATCC 25416, which was used for further study. Results of SDS-PAGE analysis, heat-treatment and reverse-phase chromatography suggest that the causative agent is not a protein. We suspect that paper electrophoresis will identify the agent to be a carbohydrate. Further characterisation is planned by mass spectrometry and NMR.
Conclusion: EPS production has been suggested as a potential virulence determinant in Bcc lung infection. Induction of EPS in the presence of "plant host extract" highlights the metabolic potential of the Bcc, and the ability of host factors to induce a phenotype which would be missed on routine culture. EPS production in Bcc may play a role in the pathogenesis of CF lung disease, similar to alginate in *Pseudomonas aeruginosa*. As the natural host, the onion model could also provide novel insights into the regulation and biosynthesis of virulence determinants in the Bcc.

84 Dynamics of the *Staphylococcus aureus* nasal carriage and upper airway colonization/infection in young Cystic Fibrosis patients

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Aims: Nasal *S. aureus* carriage in cystic fibrosis (CF) patients might represent a risk factor for subsequent colonisation and infection of the upper and lower airways.
Methods: Nasal ($n = 590$) and throat swabs ($n = 901$) or sputum ($n = 87$) of 63 CF children younger than six years (median age 3.6 years) followed for at least 18 to 24 months, were evaluated. 109 healthy children served as a control (median age 1.6 years). Clonal identity of *S. aureus* strains was determined by pulsed-field gel electrophoresis.
Results: *S. aureus* was cultured in 22/63 CF children (35%) from the anterior nares or in 30/63 (48%) from the throat at the first visit. Nasal and throat carriage of the control group was 18% (20/109), respectively. 16 CF children never carried *S. aureus* in their nares, 2 children never in their throat. Most patients were colonized in throat and nose when recruited to the study (28/63). In 6 patients, initially the nose was colonized followed by the throat, whereas in 14 patients, the first *S. aureus* isolates were cultured from the throat later followed by the nose.
Conclusions: The prevalence of both, nasal and throat colonization, in CF children was statistically significantly higher than in healthy children ($p < 0.05$). A subset of patients with nasal colonization might benefit from eradication procedures of nasal *S. aureus* carriage by topical mupirocin.
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90 Interest of measuring body composition to determine antibiotic dosing in Cystic Fibrosis

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Aminosides are hydrophilic antibiotics. Loss of fat mass, a frequent occurrence in cystic fibrosis, thus corresponds to greater diffusion. This study investigated the influence of the mode used to calculate the dose, in kilograms of total body weight or lean body mass, on the accuracy of the expected serum concentration.
During 32 courses of antibiotic therapy in 16 patients, 10 girls and 6 boys with ages ranging from 9 to 26 years and weights ranging from 18 to 58 kg, 32 measurements of peak serum concentration of aminoside were coupled to measures of lean body mass. Tobramycin was used in 29 cases at a dose of 12 2 mg/kg of total body weight and amikacin was used in the other 3 cases, also at a dose of 22 ± 6 mg/kg of total body weight; both were administered once daily. Aminoside was given by a 30-min intravenous infusion and blood was drawn for peak serum concentration 30 minutes later. Lean body mass was assessed at the same time by measuring the impedance values with the Bodystat® QuadScan 4000.
The antibiotic serum concentrations were closely correlated with the dose expressed as kg of total body weight ($r = 0.75$) and kg of lean body mass ($r = 0.81$). The differences between the theoretical concentrations, calculated from the regressions established for the doses expressed in kg of total body weight and kg of lean body mass, and the real concentrations were greater, in 21 cases out of the 32, when the dose was expressed in kg of total body weight than when expressed as kg of lean body mass ($p < 0.05$).
The determination of body composition can be useful for more precise calculation of the correct dose of aminosides for patients with cystic fibrosis.