128 Dyella species – a new opportunistic pathogen or an innocent bystander in cystic fibrosis?

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Objective: To describe Dyella species associated with cystic fibrosis (CF).

Methods: Phenotypic identification by VITEK-2; mass spectrometry; 16S rDNA sequencing; minimal inhibitory concentration by Etest® and categorisation as susceptible (S) or resistant (R) according to EUCAST interpretative criteria for Pseudomonas.

Results: An oxidase-positive Gram-negative rod was isolated on Burkholderia cepacia selective agar in May 2009. Initially the bacterium was identified by VITEK-2 as Elizabethkingia meningoseptica, however subsequent 16S rRNA gene sequencing revealed it belonged to genus Dyella. Only one single human infection with Dyella (bacteremia in a hemodialysis patient) has been described previously. Dyella species was cultured from this patient in 5 of 11 sputum samples during 2010, and from 8 of 10 specimens in 2011, rendering the patient chronically infected when applying the “Leeds criteria” often used for Pseudomonas aeruginosa infection.

An unusual antibiotic susceptibility pattern was observed: piperacillin-tazobactam, 3 mg/L (S); meropenem, >32 mg/L (R); fosfomycin, 256 mg/L (R); ciprofloxacin, 3 mg/L (R); moxifloxacin, 0.25 mg/L (no breakpoint); tobramycin, 3 mg/L (S); colistin, >256 mg/L (R).

A unique MALDI-TOF mass spectrum was displayed, and the strain is easily recognised by mass spectrometry after the generation of reference spectra. The patient experienced a steep decline in FEV1 (approx. 4%/year) for several years prior to and after colonisation with Dyella.

Conclusion: Bacteria of genus Dyella can colonise the CF lung and pose a diagnostic challenge for the clinical microbiology laboratory. The clinical significance of the colonisation is unknown.

129 Benefits of testing multiple isolates of Staphylococcus aureus isolated from the sputa of patients with cystic fibrosis

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Objective: Cystic fibrosis (CF) patients are highly susceptible to colonisation by Staphylococcus aureus and can suffer repeated infections. It is known that CF patients are often colonised by more than one strain of S. aureus. What is less well established is whether co-colonisation by multiple strains has consequences for patient care.

Method: SAID agar (bioMérieux) is our routine medium for detection of S. aureus from CF sputum. Over 4 months 78 S. aureus positive samples from 54 CF patients were received. Routine culture plates that were positive for S. aureus at 48h were left at room temperature for a further 24h to enhance variations in pigmentation. Morphological variants based on colony size, colour and texture were recovered and identifications confirmed using MALDI-TOF MS. From these positive samples 122 separate isolates were recovered on the basis of colonial morphology. A total 59 isolates from 16 patients from whom more than one isolate was recovered were subjected to mecA PCR, PVL PCR, spa typing and antibiotic susceptibility testing. Results showed that 8/16 patients possessed S. aureus of more than one spa type and 4/16 were colonised with more than 1 clonal complex. Antibiotic profiles varied between isolates of single patients. One patient was colonised with both MRSA and MSSA, one possessed a PVL+ and PVL− strain and 3 patients were colonised with small colony variants (SCV) as well as isolates with a normal phenotype. One strain of antibiotic-dependant SCV S. aureus was isolated.

Conclusion: Isolation and testing of a single colony of S. aureus risks missing clinically significant features of colonisation by multiple isolates of S. aureus.

130 Lack of association of meticillin-resistant Staphylococcus aureus and long term use of azithromycin in cystic fibrosis patients: a French cohort study

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Background: Long-term low-dose azithromycin (AZM) treatment in cystic fibrosis (CF) has raised the concern of appearance of resistant microorganisms. Our study investigates association on meticillin-resistant Staphylococcus aureus (MRSA) emergence and azithromycin treatment.

Methods: CF patients never MRSA infected prior to inclusion were included in a retrospective cohort study. Follow up started 2 years prior to treatment up to 3 years after. MRSA distribution and forced expiratory volume in the first second (FEV1) decline were compared between 19 patients on AZM treatment for at least a year and 57 age matched controls. Microbiological results prior to AZM were also compared within groups to treatment period using Wilcoxon rank test for paired variables and logistic regression.

Results: Three (16%) AZM patients compared to 8 (14%) controls had MRSA positive cultures (p = 0.85). AZM use was not predictive of MRSA isolation, using Cox regression adjusted for age, FEV1 and gender (p = 0.40). In AZM treated patients %FEV1 improved in the first year after initiation of azithromycin (mean annual change: −8.2% before versus 3.6% after initiation; p < 0.01) but decreased during the second third and four years after initiation, to become similar to control group (−1.25%). There is no association between AZM and Aspergillus fumigatus infection in this study.

Conclusions: MRSA emergence in CF patients is not increased by maintenance azithromycin therapy. Despite temporary improvement, slope of FEV1 decline seems not to be decreased by AZM therapy.

131 The clinical implications of MRSA colonisation in a cohort of Irish adult cystic fibrosis (CF) patients and MRSA carrier frequency and clinical sequelae in their household contacts

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Objectives: MRSA colonisation in CF has been linked to reduced survival raising the question of eradication strategies. A single US study highlighted a 14.7% MRSA colonisation rate in CF household contacts. Our aims were to 1. determine the prevalence of MRSA in an adult Irish CF cohort and correlate with clinical phenotype, 2. to measure the MRSA carrier frequency in this cohort’s household contacts and 3. to assess for superiority using a molecular detection method.

Methods: MRSA colonisation was determined as 2 sputum samples positive for MRSA between March 2009 and March 2011 in keeping with international standards. Clinical phenotype data were recorded from a medical case note review. MRSA carrier frequency was determined in consenting household contacts (HHC) with nasal swab cultures and with LightCycler MRSA advanced test ©. HHC also completed a health questionnaire.

Conclusions: 9 patients (7 male/2 female) met criteria with a 6.97% (n = 9/129) MRSA prevalence. In CF patients MRSA colonisation was associated with a trend towards decreased lung function (62% predicted vs 72% predicted) and increased exacerbation rate over 2 years (1.55 vs 1.46). All HHCs (n = 19) consented to screening. The prevalence of chronic MRSA colonisation in HHC was 18.7% based on standard culture and 12.5% based on LightCycler MRSA advanced test ©. None of the HHC colonised with MRSA had any active medical problems. This is the first study demonstrating MRSA carrier frequency in European HHC and supports the potential role of eradication in HHC as part of a MRSA eradication strategy in CF. Our data did not demonstrate superiority using a molecular detection model.