**4. Microbiology**

152 Delineation of five new species within the *Burkholderia cepacia* complex

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The *Burkholderia cepacia* complex (Bcc) is an important group of organisms, containing species of ecological, biotechnological and pathogenic interest. Their taxonomy and identification are complex and are being studied through classical polyphasic taxonomy approaches and through multi-locus sequence typing (MLST). We recently demonstrated that *Burkholderia ubonensis*, a species thus far not encountered in CF specimens, represents a tenth genomovar within the complex. Among thousands of Bcc isolates, we delineated five clusters of strains, both by polyphasic taxonomy as well as through MLST analysis that cannot be classified into one of the ten established Bcc species, and thus represent five novel Bcc species. Two of these novel species have been isolated from CF specimens only; the others have been isolated from infections in CF and non-CF patients, and from environmental sources. Although all five novel species clearly represent rarely encountered bacteria, we have designed novel recA gene based PCR tests for their specific identification.

153 Timing of bacterial colonization in Cystic Fibrosis with emphasis on *Staphylococcus aureus*


**Background:** pulmonary infection by *P. aeruginosa* is the major cause of death in patients with cystic fibrosis (CF). It is suggested that *S. aureus* airway colonization in infants with CF provides a favorable environment to *P. aeruginosa* installation. **Aim:** to verify through serial bacterial cultures the timing of bacterial colonization in the first years of life.

**Methods and Subjects:** this was a prospective evaluation of 25 CF patients diagnosed after positive neonatal screening by IRT. At routine periodical visits oropharyngeal swabs were obtained for microbiological analysis. Two hundred and thirty three oropharyngeal cultures were collected (average of 9 per patient), within a median interval of 53 days, for one year. *S. aureus, P. aeruginosa, Haemophilus spp., S. pneumoniae* and *B. cepacia* colonies were identified by standard methods and tested for antimicrobial susceptibility by agar dilution method. *S. aureus* isolates were molecularly typed by pulsed field gel electrophoresis (PFGE).

**Results:** *S. aureus* was shown to be the first bacterium to colonize the patients' oropharynx (after 214 days, on average), and more frequently (42%) than *Haemophilus spp.* (19%) and *P. aeruginosa* (16%). The isolates were susceptible to ciprofloxacin (74% of isolates), erythromycin (69%), gentamicin (64%), sulfamethoxazole/trimethoprim (76%) and vancomycin (100%). Methicillin-resistant *S. aureus* isolates (25%) had PFGE profiles identical to the Brazilian clone. *P. aeruginosa* isolates were non-mucoid and multiresistant.

**Conclusion:** *S. aureus* and *Haemophilus spp.* colonized the CF patients airways earlier than other common agents in CF, followed by non-mucoid strains of *P. aeruginosa*.

154 The impact of MRSA colonization rates in one adult CF centre

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**Introduction:** Although some CF units have reported an increasing prevalence of MRSA, there is controversy regarding the importance of this organism in CF. Although we do not have a routine MRSA eradication policy, our heart/lung hospital has stringent cross infection precautions to prevent MRSA spread, and we have not noticed MRSA as a problem in our CF patients. To look at this further, we have compared the MRSA colonization rates in our patient over time.

**Methods:** We undertook a cross-sectional microbiological survey of staphylococcal organisms from all CF patients attending our regional adult unit in 1999 and again in 2004. We looked at the prevalence of MRSA and whether it was intermittent and whether patients were taking prophylactic anti-staphylococcal therapy.

**Results:** In 1999, 47 of 121 patients (39%) had at least one culture of *S. aureus*, of whom 43 (92%) were taking antimicrobial therapy. Eight of these (6.6% of the whole clinic) grew MRSA, 7 of which were intermittent (<3 cultures in a 6 month period). In 2004, 51 of 177 patients (29%) had at least one culture of *S. aureus, and 59 of these (77%) were taking anti-staphylococcal prophylaxis. Six of these (3.4% of the whole clinic) grew MRSA, of which 4 were intermittent. Of those patients with positive MRSA cultures in 1999, one had died and one had left the area, but the remaining 6 patients had no positive cultures in 2004.

**Conclusions:** Thus, we have shown that in our unit, MRSA colonization of CF patients is very limited, and the few patients who acquire it do not usually become colonized but clear it over time. These data suggest that strategies aimed at preventing cross infection may be more important that eradication policies in tackling MRSA in CF units.

155 A UK national audit of MRSA prevalence and eradication strategies in Cystic Fibrosis

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**Introduction:** The prevalence of MRSA in CF in the UK is unclear, but reported at 2–3% [1,2]. Only one study has shown correlation with clinical deterioration [1], hence it is unclear as to whether clinicians should routinely attempt to eradicate on acquisition. Furthermore, only two small case-series have reported the effectiveness of eradication [3,4]. Given the paucity of literature on the prevalence and eradication of MRSA, we conducted a national audit.

**Aims:** to determine:
- Prevalence of MRSA in sputum.
- How many centres routinely eradicate on acquisition.
- Eradication protocols.
- Reasons for not attempting eradication.
- Interest in an eradication trial.

**Methods:** An anonymous postal questionnaire auditing prevalence of MRSA and eradication strategies was sent to all 60 UK adult and paediatric CF centres in 2005.

**Results:** Response rate 76% (43 centres), information obtained for 4537 patients:

<table>
<thead>
<tr>
<th>Prevalence</th>
<th>Range</th>
<th>How many centres routinely eradicate?</th>
<th>How many centres have a standard Protocol?</th>
<th>Eradication protocols</th>
<th>Reasons for not eradication</th>
</tr>
</thead>
<tbody>
<tr>
<td>259/4537 (5.7%)</td>
<td>2–20%</td>
<td>51.9% (n=23)</td>
<td>55.6% (n=26)</td>
<td>No consistent approach, Rifaximin and Fusidic acid common</td>
<td>No evidence of MRSA causing a deterioration 20.0% (n=9); no that eradication works 18.0% (n=8); MRSA disappearing without treatment 15.0% (n=6)</td>
</tr>
<tr>
<td>Interest in a National Trial</td>
<td>62.5% (n=27)</td>
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**Summary:**
- UK prevalence 5.7%
- BUT range 2–20%, indicating some centres have a much higher prevalence than previously reported [1,2].
- Wide range of eradication protocols in UK CF centres.
- Whilst most centres eradicate, attitudes to eradication are ambivalent.
- Majority interest in National trial for eradication.

**References**