Efficacy of nebulised colomycin in patients with non-cystic fibrosis bronchiectasis colonised with *Pseudomonas aeruginosa*

Colonisation with *Pseudomonas aeruginosa* is a feature of bronchiectasis and is associated with more severe disease and lower quality of life. Nebulised colomycin, a polymixin, is a topical antibiotic with potent activity against most Gram-negative organisms, including *P. aeruginosa*, is frequently employed in these patients, but evidence is lacking for this approach.

We have retrospectively assessed the efficacy of nebulised colomycin in *P. aeruginosa*-colonised patients receiving a minimum of 6 months treatment. Patients who received concomitant prophylactic macrolide treatment for >4 weeks were excluded. Bronchiectasis was confirmed in all patients by standard high-resolution CT criteria, and all received nebulised colomycin 1–2 megunits twice daily through a standard jet nebuliser and compressor. The annualised frequency of hospital admissions, infective exacerbations requiring rescue antibiotics and sputum positivity for *P. aeruginosa* per patient, prior to, and while on, colomycin treatment was compared. Forced expiratory volume in 1 s (FEV₁) and self-reported sputum volume within 6 months of starting treatment and most recent on treatment were also compared. The data were analysed by non-parametric Wilcoxon test (table 1).

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Clinical outcomes pre- and postnebulised colomycin</th>
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</thead>
<tbody>
<tr>
<td>n = 19</td>
<td></td>
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<tr>
<td>Precolomycin Mean (SD)</td>
<td>Postcolomycin Mean (SD)</td>
</tr>
<tr>
<td>Exacerbation frequency/year</td>
<td>7.8 (3.0)</td>
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<tr>
<td>Admission frequency/year</td>
<td>3.0 (2.7)</td>
</tr>
<tr>
<td><em>P. aeruginosa</em> sputum positivity/year</td>
<td>4.2 (2.5)</td>
</tr>
<tr>
<td>Sputum volume (ml)</td>
<td>31 (20.8)</td>
</tr>
<tr>
<td>FEV₁, litres</td>
<td>1.13 (0.6)</td>
</tr>
</tbody>
</table>

*p < 0.001; †p < 0.002.

Several studies have assessed the efficacy of nebulised tobramycin in *P. aeruginosa*-colonised patients with non-cystic fibrosis bronchiectasis. Several studies have assessed the efficacy of nebulised tobramycin in *P. aeruginosa*-colonised patients with non-cystic fibrosis bronchiectasis. 

In conclusion, nebulised colomycin appeared to reduce exacerbation frequency, hospitalisation, sputum *P. aeruginosa* positivity and sputum volume in *P. aeruginosa*-colonised patients with bronchiectasis and was well tolerated. These results are encouraging in this severely affected patient group and strengthen the need for a prospective, adequately powered, randomised controlled trial to investigate the efficacy of this treatment further.

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REFERENCES


Maternal smoking during pregnancy decreases Wnt signalling in neonatal mice

Epidemiological studies have shown that maternal smoking during pregnancy is a risk factor for the development of asthma. However, the mechanisms underlying the increased risk of developing asthma are largely unknown. We have shown that maternal smoking during pregnancy increases smooth muscle layer and collagen III deposition around the airways in mouse offspring in association with increased airway hyper-responsiveness. Other factors also appear to contribute to the development of increased airway hyper-responsiveness. We hypothesise that lung development is such a factor. Since genes in the Wnt-β-catenin pathway are essential for lung development and epithelial stem cell differentiation/expansion, we investigated the effects of maternal smoking during pregnancy on Wnt gene expression in lung tissue from neonatal offspring.

Balb/c mice were exposed to fresh air or cigarette smoke from 3 weeks before conception until delivery. Offspring (n = 16 from non-smoking mothers, n = 18 from smoking mothers) were killed 1 day after birth. RNA was isolated from total lung tissue and qRT-PCR was performed using microfluidic card assay.

We found that maternal smoking during pregnancy decreased the expression of *Foxa2*, *Fzd-7*, *Egf*, *Cmb1*, *Foxi1* and *Pdgfra* (encoding forkhead box a2, frizzled receptor 7, epidermal growth factor, β-catenin, fibroblast and platelet-derived growth factor receptor a, respectively) in lung tissue from neonatal offspring (figure 1). Maternal smoking...