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LETTER TO THE EDITOR

Effects of long-term treatment with Montelukast in mild cystic fibrosis (long term treatment with montelukast in cystic fibrosis)

Schmitt-Grohé et al.¹ show that Montelukast reduces eosinophilic inflammation in cystic fibrosis (CF). However, we failed to demonstrate that a significant clinical benefit after a 21-day treatment course occurred. In the current submission, we report the effects of long-term treatment with Montelukast of the original study population of Schmitt-Grohé et al.¹

Pulmonary function tests (FEV₁, MEF₂₅), total eosinophil count, eosinophil cationic protein (ECP), IgE as well as sputum samples or pharyngeal swabs were assessed at the beginning of the study (PRE) and after a long-term treatment course (POST). Differences were evaluated using the Wilcoxon test for paired samples.

Follow-up data was available from 15 of the original 16 patients (9 boys/6 girls; age (PRE/POST 8.0/13.0y) with a median observation period of 5.0yr (3.48–5.42yr). There was a significant decrease in total eosinophil count (PRE/POST 150/0 (/μl); $P < 0.05$) and ECP (PRE/POST (μg/l) 13.55/8.1; $P < 0.023$) and no change in IgE (PRE/POST 34.6/49.6 kU/l; n.s.). Overall there was no change in FEV₁ (PRE/POST (%) 92/93; n.s.), whereas a significant increase of MEF₂₅ (PRE/POST (%) 55/89; $P < 0.012$) was observed. Surprisingly, 6 of the originally 7 chronically *Pseudomonas aeruginosa* infected patients were repeatedly negative ($P < 0.031$) in sputum.

Our data show that eosinophilic inflammation in CF was consistently lower under Montelukast than before treatment. Interestingly, there was no deterioration of lung function and a significant increase in MEF₂₅, suggesting a beneficial role of Montelukast to prevent remodelling and small airway disease. In addition, there was a significant decrease in *P. aeruginosa* colonization after treatment with Montelukast in combination with antibiotic treatment. This finding was totally unexpected and lead to the conjecture that Montelukast might help to prevent *P. aeruginosa* colonization. The mode of action is speculative: *The increase in MEF 25 reflects improved patency of small airways due to Montelukast. Interestingly it was recently shown that Montelukast improves small airway disease in*

*asthmatic subjects detected by high-resolution computer tomography.*² Moreover it is well documented that narrowing of small airways in addition to sticky secretion creates a micromilieu that favors growth of *P. aeruginosa*. There is also evidence that respiratory viral infections³ cause injury to respiratory epithelium, which leads to increased adherence of bacteria to pharyngeal cells. Montelukast ameliorates symptoms following respiratory viral infections.⁴ In addition, Bisgaard et al.⁵ have shown a decreased ciliary beat frequency (CBF) due to cysteinyl leukotrienes (cysLT).

In conclusion, long-term double-blind placebo-controlled trials are needed to show whether Montelukast can improve small airway disease and prevents (in combination with antibiotic therapy) adherence of *P. aeruginosa* in CF patients.

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