



Reduction of Eosinophils in Small Airways by Inhaled Steroids is Insufficient in Patients with Adult Asthma

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Background: Recent reports suggest that small airway as well as large airway involvement in asthma is important. We investigate the therapeutic effects of a meter-dose inhaler of chlorofluorocarbon-beclomethasone dipropionate (CFC-BDP) and dry-powder fluticasone (DP-FP).

Methods: Lung specimens obtained at operation due for small size lung cancer in 16 asthmatic patients and 16 controls were evaluated immunohistochemically using antibodies of EG2 (eosinophil), AA1 (mast cell), CD68 (macrophage), and CD34 (pluripotent hematopoietic stem cell). We calculated the number of each cell type in 5 fields in the inner and outer areas of large airways (luminal diameter; ≥ 2 mm) and small airways (< 2 mm) using computer software.

Results: In asthmatic patients eosinophils were significantly increased in both inner and outer areas of small airways and the number of CD34+ cells was significantly elevated in inner areas as compared with controls. Although the density of eosinophils in the inner area of large airways was significantly suppressed ($p < 0.02$), there was no such suppression in the inner areas of small airways in asthmatic patients treated with CFC-BDP or DP-FP.

Conclusions: It was speculated that inhaled CFC-BDP and DP-FP might deposit mainly in large airways and fail to fully reach small airways, consequently allowing eosinophilic inflammation to continue in small airways.

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