Epithelial basement membrane thickening is related to TGF-Beta 1 expression in children with chronic respiratory diseases.

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Abstract

BACKGROUND: The complex structural changes of bronchial mucosa, known as remodelling, have been considered unique and typical for asthma. However, similar changes were recently found in other chronic respiratory diseases. The aim of this study was to compare basement membrane (BM) thickness and the number of transforming growth factor beta 1 (TGF-β1) positive epithelial cells in children with asthma, cystic fibrosis (CF), primary ciliary dyskinesia (PCD) and healthy controls.

METHODS: A total of 58 children (11.1 ± 3.9 yr, 55% males) were enrolled in this cross-sectional study. Endobronchial biopsy was performed in 27 children with asthma, 12 with CF, 12 with PCD and in 7 control patients. We studied the samples using light microscopy to assess BM width, the number of TGF-β1 positive epithelial cells and their correlation.

RESULTS: We found increased BM thickness (6.65 ± 1.22 μm vs. 2.93 ± 0.75 μm,
p < 0.01) and a higher number of TGF-β1 positive epithelial cells (61.39 ± 19.03 vs. 21.57 ± 12.58, p < 0.01) in children with chronic respiratory diseases compared to controls. There was no difference in these parameters between asthma, CF and PCD. A positive correlation between BM thickness and the number of TGF-β1 positive cells was observed in all groups including controls (r = 0.84, p < 0.01).

CONCLUSIONS: Increased BM thickness and number of TGF-β1 positive epithelial cells were found in children with asthma, CF and PCD. The number of TGF-β1 positive cells correlated positively with the BM thickness in all groups. We suggest that this might be a common generic feature of bronchial remodelling in chronic respiratory diseases.


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