Intercellular Adhesion Molecules Expressed by Normal, Cystic Fibrosis, and Cancer Airway Epithelial Cell Lines

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Abstract

Rationale: Proper expression of intercellular adhesion molecules is important to maintain the barrier function of the airway mucosa, and loss of epithelial cell-cell interactions may occur during cystic fibrosis lung disease or metastasis of lung tumors.

Methods: The expression of 7 different cell-cell adhesion molecules was determined by Western blot analysis from a panel of 12 airway epithelial cell lines and immunoreactive band intensities were compared. The proteins examined were α-catenin, β-catenin, γ-catenin, ezrin, E-cadherin, ICAM-1, and mucin-1. The cell lines examined included immortalized bronchial epithelial cells (1HAEo$^-$, BEAS-2B, HBE1-C2, 16HBE14o$^-$), cystic fibrosis epithelial cells (IB3-1, CFBE41o$^-$, CFTE29o$^-$, CF/T43), CFTR-corrected cystic fibrosis cells (C38, S9), and lung cancer cells (A549, NCI-H292). All cell lysates were stained with normal IgG as a negative control.

Results: On average, the normal bronchial epithelial cells showed higher Western blot reactivities for α-catenin, β-catenin, γ-catenin, ezrin, and mucin-1, compared with cystic fibrosis epithelial cells. E-cadherin and ICAM-1 exhibited greater reactivities in cancer cells compared with normal or CF cells. In particular, NCI-H292 cells showed dramatically increased ICAM-1 expression. None of the normal cells showed any distinctive patterns of blot scores to distinguish from the cancer or cystic fibrosis cells.

Conclusions: Our results confirm that cancer cells express less catenins compared with normal cells which may contribute to their ability to metastasize. Similarly, the cystic fibrosis airway epithelial cells express less cell-cell adhesion molecules compared with normal cells which may contribute to their susceptibility to *Pseudomonas aeruginosa* lung infection.

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Results

Immunoblot Analysis of Adhesion Molecules in Lysates of Human Airway Epithelial Cells