PD-45

Alveolar Epithelial Cells Express Markers of Senescence in Lungs from Patients With Idiopathic Pulmonary Fibrosis

1Department of Internal Medicine, CHA Bundang Medical Center, College of Medicine, CHA University, 2Department of Internal Medicine, Kyungpook National University School of Medicine, 3Department of Medicine, University of California, San Francisco, School of Medicine, CA, USA, 4Department of Surgery, University of California, San Francisco, School of Medicine, CA, USA, 5Department of Anatomic Pathology, University of California, San Francisco, CA, USA

Eun Kyung Kim, Seung-Ick Cha 2, Aaron V. Schroeder 3, Jasleen Kukreja 4, Kirk D. Jones 5, Jeffrey A. Golden 3, Michael A. Matthay 3, David J. Erle 3, Harold R. Collard 3, Paul J. Wolters 3

Background: The prevalence of idiopathic pulmonary fibrosis (IPF) increases with age. Recent reports have demonstrated that mutations in TERT or TERC and short telomeres are risk factors for the development of IPF. Because short telomeres induce cellular senescence, these findings suggest senescence may occur in IPF lung.

Methods: To evaluate for cellular senescence, we compared microRNA (miRNA) expression by miRNA arrays in type II epithelial cells. Senescence-associated β-galactosidase staining and immunohistochemical detection of p16, p21 and p53 were examined in sections of lung obtained from IPF patients and normal controls.

Results: Expression of miR34-a, -b, and -c, which reportedly induce senescence in human epithelial cells are increased in IPF type II epithelial cells. β-Galactosidase activity is detectable on type II epithelial cells of IPF, but not normal lung. p16, p21 and p53 were detectable by immunostaining in IPF epithelial cells.

Conclusions: IPF epithelial cells express several markers of senescence. These results suggest that the senescence of alveolar epithelial cells is accelerated in patients with IPF and may play a role in the pathogenesis of IPF.