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Title: Difference in the dynamic state between SP-A and SP-D in the IPF lung

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Body: Background: Surfactant protein (SP)-A and SP-D are useful biomarkers for the diagnosis and evaluation of the activity of interstitial lung diseases. Although the concentration of both proteins in sera from idiotathic pulmonary fibrosis (IPF) patients are increased, the degree of values and the ratio of SP-A/SP-D vary according to each patient. The dynamic states of these proteins may differ in IPF lungs. Methods: We investigated lungs of 18 IPF patients who underwent surgical open-biopsy. We stained the lung tissues using anti-human mouse monoclonal antibodies for SP-A (PE10) and SP-D (10H11). Moreover, we performed double immunostaining with CD34 which stains capillary endothelial cells or D2-40 which stains the endothelium of lymph ducts. Results: The type II alveolar epithelial cells were hyperplastic in the IPF lung, whose cytoplasm were positive for SP-A and SP-D. Capillary vessels had developed in close contact with alveolar surface and regenerated type II alveolar epithelial cells, while lymph ducts were distributed in the center of fibrous interstinum where both proteins were negative. SP-A was not distributed in capillary vessels where only SP-D was observed. SP-A was distributed in thick mucus inside of honeycomb-cysts and ectatic respiratory tracts, but SP-D was not. Conclusion: The difference of dynamic states between SP-A and SP-D in the lungs of patients with IPF was suggested in this study. It was thought that the export pathway to circulation of these proteins was mainly capillary vessels which distributed close to alveolar space and producing cells. SP-D might be delivered to serum more easily, while SP-A seems to be trapped by mucus inside of honeycomb-cysts and ectatic respiratory tracts.