

Abstracts of Outstanding Presentation (3)

The Association between Serum Concentration of Surfactant Protein D and Progression of Chronic Obstructive Pulmonary Disease

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Objective

Surfactant protein D (SFTPD), expressed primarily in type II alveolar cells, is a lung-specific anti-inflammatory factor that antagonizes inflammation by inhibiting oxidative stress and stimulating innate immunity. Emphysema develops in *SFTPD*-knockout mice, and we have previously identified an association between genetic variation in *SFTPD* and susceptibility to emphysema—a major phenotype of chronic obstructive pulmonary disease (COPD) (Ishii T, et al. 2012). In the present study, we investigated whether SFTPD has a protective effect against the progression of COPD.

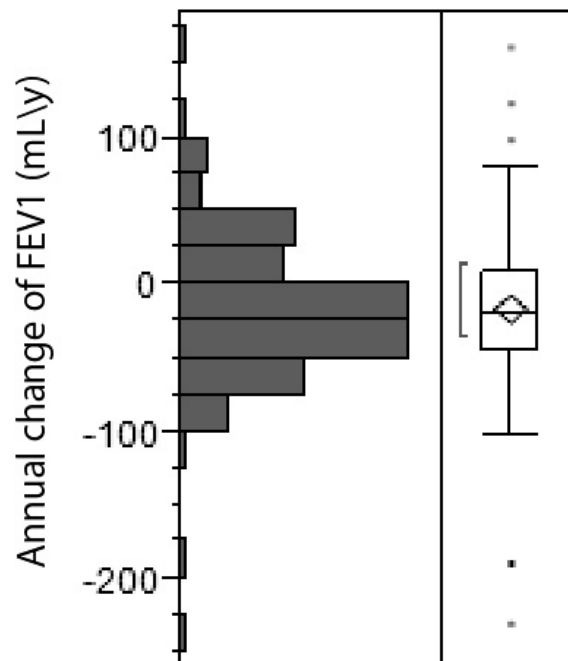


Fig. 1 The distribution of annual change in FEV1.

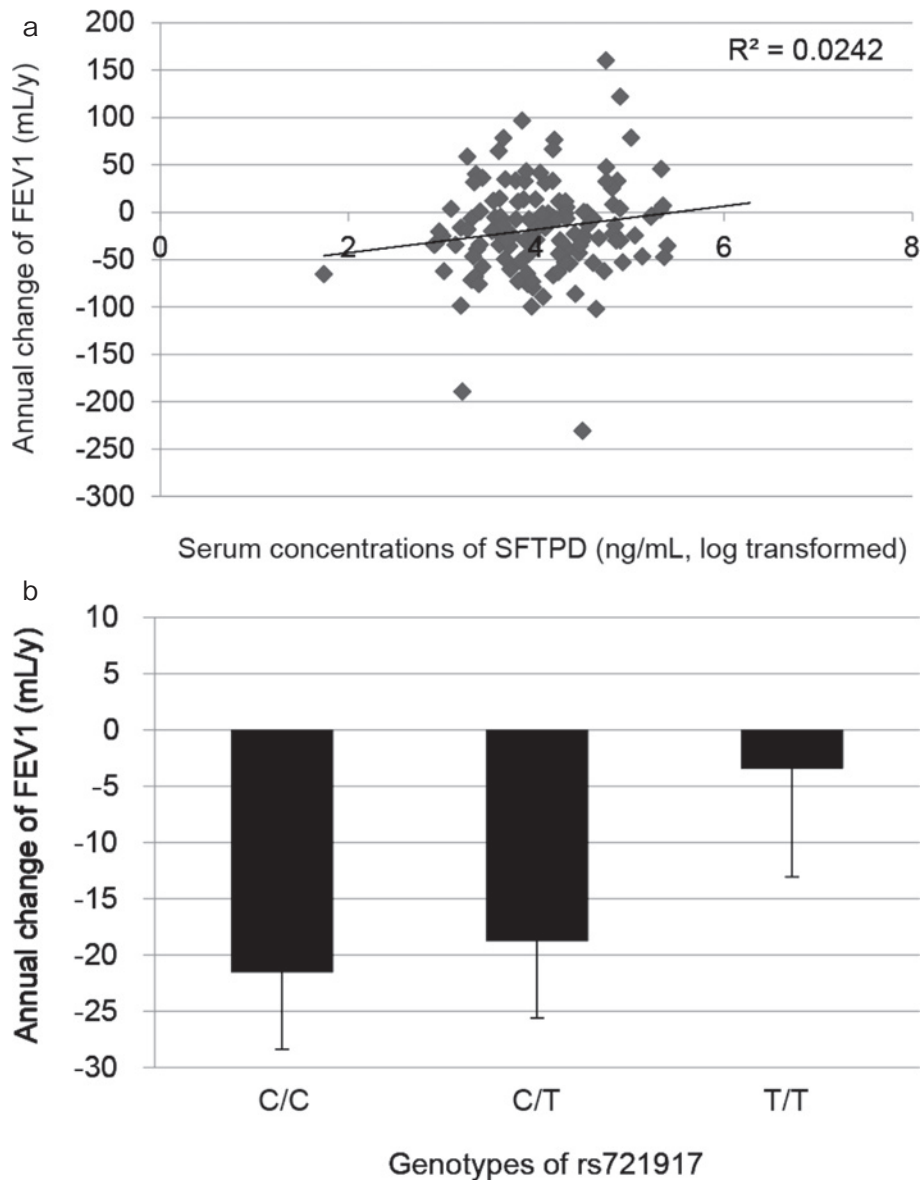


Fig. 2 The association between annual changes in FEV1 and the concentration of SFTPD protein in the serum (Panel a) and its coding polymorphism (Panel b).

Materials and Methods

We recruited 270 subjects, who had been enrolled in our previous study of the association between emphysema and genetic variations of SFTPD. Of these subjects, those who we followed up to assess forced expiratory volume in 1 second (FEV1) for 3 or more years and at 3 times or more points were studied. We investigated the association between the annual decrease in FEV1, which corresponds to COPD progression, and a coding polymorphism of *SFTPD* (rs721917), and the serum concentration of SFTPD protein (log-transformed) by regression analyses adjusted for age, sex, smoking status, extent of emphysema assessed with computed tomography (low attenuation area), and reversibility of FEV1.

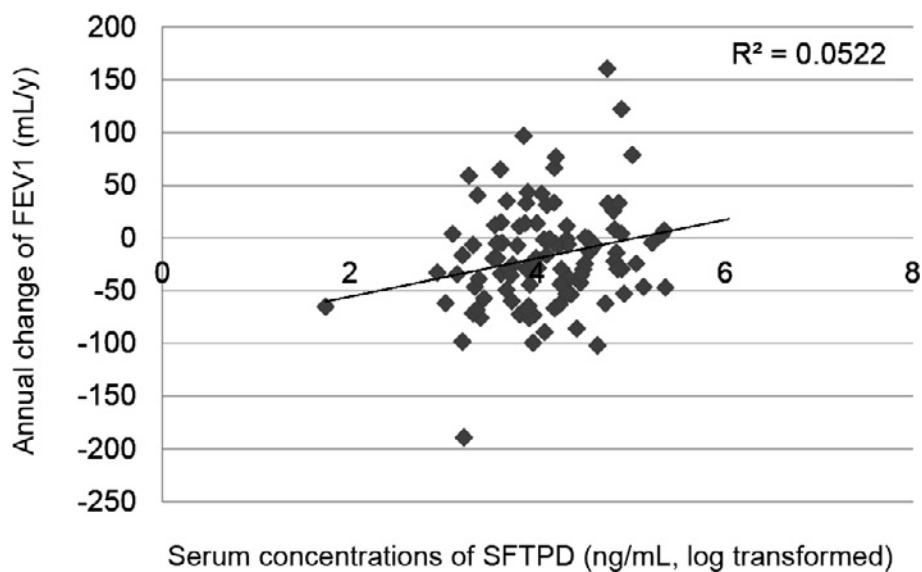


Fig. 3 The association between annual change in FEV1 and the serum concentration of SFTPD in subjects with COPD.

Results

The subjects were 135 current or former smokers (mean age, 68.7 ± 8.3 years; 124 men and 11 women), including 104 subjects with COPD. The mean annual decrease in FEV1 was 16.8 mL (**Fig. 1**), which is consistent with a previous report. The annual decrease in FEV1 tended to be associated with the serum concentration of SFTPD ($p=0.07$; **Fig. 2a**) but not with rs721917 (**Fig. 2b**). The annual change in FEV1 showed a significant negative correlation with the serum concentration of SFTPD in subjects with COPD ($p=0.02$; **Fig. 3**).

Conclusions

Because a low serum concentration of SFTPD is associated with a rapid decrease in FEV1, SFTPD protein is thought to have a protective effect against the rapid progression of COPD.