Progranulin Level Correlates with Degree of Airway Obstruction in Asthma Patients

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Background: Progranulin is a pleiotrophic protein known to function in various physiological and disease processes. Progranulin concentration negatively correlated with mediators of neutrophilic inflammation in COPD and it was implicated to have an anti-inflammatory role. However, it has not been studied in asthma and specifically through what mechanistic pathway progranulin exerts its anti-inflammatory effect. As a pilot study, we aimed to identify the presence of progranulin in asthma in order to relate with mechanism study in the future, which is another typical chronic airway inflammatory disease.

Methods: Progranulin levels in serum were measured by ELISA in asthma patients (n=475) and normal subjects (n=43) and was compared with pulmonary function and other various clinical parameters.

Results: Progranulin concentration was significantly lower in asthmatics than in healthy subjects (25.51±6.72 vs 33.92±10.99, p<0.001). Progranulin level was compared within asthma patients according to their degree of airway obstruction, and the level showed positive correlation with FEV1/FVC predicted. (R=0.40, p<0.001) Patients diagnosed with asthma/COPD overlap syndrome (n=39) showed lower progranulin level (21.88±5.96 vs 25.84±6.70, p<0.001) and poor lung function (FEV1% predicted, 57.00±17.63 vs 77.20±18.81, p<0.001) compared with patients with asthma (n=436) when subgroup analysis was performed.

Conclusions: The results demonstrate progranulin concentration is lower in asthmatics and the level correlates with the degree of airway obstruction. Progranulin may be associated with pathogenesis of severe asthma with fixed airway obstruction.

Analysis of Severe Asthma Phenotypes by Using Quantitative Computed Tomography: A Cross-Sectional Study

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Background: Severe asthma is a heterogeneous disease with various phenotypic characteristics. Assessment of different airway remodeling patterns by computed tomography (CT) is a new approach that may be useful in the classification of asthma phenotypes. Methods: We prospectively recruited patients with severe asthma at the Seoul National University Hospital, and performed CT scans along with pulmonary function test, induced sputum test, fractional exhaled nitric oxide, and serum cytokine measurements.

Results: Two radiologists blinded to clinical information performed qualitative analysis of each CT and determined the phenotype by consensus. Quantitative CT measures of bronchial wall thickening, emphysema, and air trapping were also investigated. Association between the radiologic findings and clinical parameters were assessed by univariate and multivariate regression analysis.

Conclusions: Severe asthma is a heterogeneous disease, but is indiscernible from its clinical features. Through CT imaging, we successfully classified severe asthma into 4 different types with distinct characteristic.