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**Title:** Low lung volume is associated with visceral adipose tissue inflammation

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**Body:** Background: Chronic obstructive pulmonary disease (COPD) is characterized by airflow limitation caused by inflammatory responses to noxious particles or gases, mainly tobacco smoking. Recently, COPD has been recognized as a systemic inflammatory disease. Although visceral adipose tissue inflammation is known to be associated with various lifestyle diseases, its contribution to the systemic inflammation of COPD remains unclear. Aim: The aim of this study was to evaluate the association between lung function and visceral adipose tissue inflammation. Methods: This study included 93 patients who underwent surgical resection due to an early stage of abdominal cancer, such as gastric and colon cancer. Visceral adipose tissue was obtained during the operation with informed consent. We quantified inflammatory cells in the adipose tissues, and evaluated its association with clinical parameters including lung function. Results: The number of visceral adipose tissue macrophage (ATM) did not show a significant correlation with FEV1% (FEV1/FVC), and was not different between patients with (n=28) and without airflow limitation (n=65). However, there was a significant negative correlation between ATM and % predicted VC ( $r=-0.24$ ,  $p=0.02$ ). In addition, there was a significant positive correlation between ATM and body mass index (BMI), abdominal circumference (AC), serum high sensitivity CRP, or the size of adipocyte. Multivariate analyses demonstrated that %VC and BMI were independently associated with the number of visceral ATM. Conclusions: The adipose tissue inflammation may contribute to the systemic inflammation of advanced COPD with low lung volume, independently from abdominal obesity.