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Title: The relationship between radiologic findings and lung function impairment in chronic obstructive pulmonary disease

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Body: Objective To evaluate prospectively the relationship between radiologic findings and lung function impairment in COPD. Methods The data of 38 consecutive patients with COPD were examined. All patients were divided into group I (GOLD I and II, n=20) and group II (GOLD III and IV, n=18) based on post-bronchodilator FEV₁. The patients underwent CT scanning and comprehensive examination of the respiratory function. Results The difference of the amounts of pulmonary emphysema, cysts, bronchiectasis, and pneumofibrosis among the patient groups was not statistically significant. Moreover, there were no statistically significant differences of TLC, VC, RV, DLCO indices between groups during disease remission. However, we have observed a significant increase of TLC, RV, and pCO₂ indices, as well as the decrease of DLCO, pO₂, and sO₂ values of group II patients comparing to group I patients during exacerbation of the disease (p<0.05). Presence of bronchiectasis and emphysema had correlation with exacerbations rate (r = 0.4, p<0.05). Presence of pneumofibrosis correlated with presence of bronchiectasis (r = 0.4, p<0.05). DLCO had correlation with exacerbations rate and amount of pneumofibrosis (r = -0.4, p<0.05). Conclusions Our study showed that relationship between radiologic findings and lung function impairment in COPD is variegated. Deterioration in DLCO values reflected emerging pneumofibrosis in COPD patients. Repeated exacerbations were associated with bronchiectasis and emphysema. The patients with more severe airflow obstruction (group II) during remission had more severe respiratory function status during exacerbation comparing to group I patients.