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Title: Relationships between COPD assessment test score and pulmonary function tests or quantitative CT analysis in Japanese COPD patients

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Body: Background: The COPD assessment test (CAT) was established as a self-describing questionnaire to assess the conditions of COPD patients, and is now used all over the world. However, the relationships of CAT score with pulmonary function tests or quantitative CT analysis are still unclear. Aims: To investigate the relations between the CAT score and indices from pulmonary function tests or quantitative CT analysis. Methods: Ninety COPD patients were recruited at the outpatient clinic of the Shiga University of Medical Science Hospital. All patients underwent pulmonary function tests, non-contrast chest CT and completed the CAT at the same time. Eighty-five patients were men and 5 were women. All patients were current or former smokers. Results: According to the severity of airflow limitation by GOLD classification, the number of patients in stage 1, 2, 3 and 4 were 24, 31, 28 and 7, respectively. The median of total CAT score was 11.8. The total CAT score was correlated with MRC score and DL_{CO}/V_A ($r=0.3220$, $p=0.0021$ and $r=-0.2350$, $p=0.0275$, respectively). The score of "breathlessness" and "activity limitation at home" had significant correlations with FEV_1 %predicted ($r=-0.3285$, $p=0.0016$ and $r=-0.2295$, $p=0.0295$, respectively), DL_{CO}/V_A ($r=-0.3484$, $p=0.0009$ and $r=-0.2953$, $p=0.0052$, respectively) and low attenuation volume(%) ($r=0.3287$, $p=0.0071$ and $r=0.3667$, $p=0.0025$, respectively). The score of "cough" and "phlegm" had no correlation with indices from pulmonary function tests or quantitative CT analysis. Conclusions: In Japanese COPD patients, some of the questions of CAT reflect the indices we used to assess COPD patients.