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Title: Prevalence and characteristics of non-hypoxemic COPD patients exhibited exercise-induced desaturation during 6MWT

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Body: Introduction: Exercise-induced desaturation (EID) is associated with impaired daily physical activity and increased mortality in COPD. The clinical characteristics of FEV_1, DLCO and SpO_2 have been suggested as good predictors of EID. However, a combination of criteria that could improve accuracy in detecting EID, needs investigation. Aim: To study the prevalence and characteristics of COPD patients who desaturate (nadir-SpO_2≤88%) in walking. Method: 402 non-hypoxemic COPD patients (age:64±8yrs; BMI:26±6kg/m2; FEV_1:52±19%pred; DLCO:54±20%pred) performed 6MWT while oxygen saturation was recorded by pulse oximeter. Using ROC curves, the threshold values with the best specificity and sensitivity to predict oxygen desaturation were determined for age, BMI, FEV_1, FRC, DLCO, PaO_2, $PaCO_2$, and baseline SpO_2. Subsequently, univariate and multivariate logistical regression were performed. Results: Univariate analysis revealed that patients aged≥60yrs; an overweight or obese BMI; a FEV_1<45%pred; a FRC>135%pred; a DLCO<50%pred; baseline SpO_2<95%pred, or a PaO_2<10kPa and $PaCO_2$<5.2kPa have higher odds for EID. However, only FEV_1, DLCO, PaO_2, SpO_2 and gender remained significant in multivariate logistical regression. Conclusion: A combination of clinical characteristics (DLCO<50%pred, FEV_1<45%pred and arterial PaO_2<10kPa with baseline SpO_2<95% and female sex) increases the odds for EID in non-hypoxemic COPD patients.