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Title: Can 6 minute walk test with continuous pulse oximetry predict nocturnal hypoxemia in chronic obstructive pulmonary disease?

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Body: Rationale: Predictors of exercise desaturation are emphysema scores and severity on pathology and CT imaging with FEV₁ and resting SpO₂ showing variable results. However, nocturnal hypoxemia predictors are less studied; hence we evaluated 6MWT with continuous pulse oximetry and spirometry indices for it. Methods: 28 patients of COPD with nocturnal hypoxemia were prospectively evaluated at Metro Centre for Respiratory Diseases, between May to July 2011 Parameters measured 1) Spirometry: Pre and Post-bronchodilator 2) Six Minute Walk test (6MWT) using continuous oximetry: baseline SpO₂(SpO₂_{base}), minimum SpO₂ (SpO₂_{min}), End SpO₂ (SpO₂_{end}), maximum heart rate (HR_{max}), minimum HR (HR_{min}) and 6 minute walk distance (6MWD) and 3) Nocturnal Oximetry: baseline, minimum & mean SpO₂, % time SpO₂ < 90%,. All parameters were statistically analyzed using SPSS Results: Of 28 patients with COPD (mean age 61.42±12.04 Yrs) 20 were males. Mean SpO₂ baseline at start of 6MWT was 94.3±3.23%. SpO₂_{min} during nocturnal oximetry was significantly correlated with SpO₂_{min} during 6MWT (r = 0.878; p value <0.001), SpO₂_{end} (r = 0.552; p value =0.002) and post-bronchodilator FEV₁ (r = 0.461; p = 0.013). Time of sleep with SpO₂<90% in nocturnal oximetry was also significantly correlated with SpO₂_{min} on 6MWT (r = -0.427; p value 0.024) and SpO₂_{base} (r = -0.543; p value =0.003) but not with SpO₂_{end} (r = -0.269; p value = 0.166) and 6MWD (r = -0.073; p-value =0.713). Conclusion: Baseline SpO₂ and maximum desaturation during exercise on 6MWT and post- bronchodilator FEV₁ are good predictors of degree and duration of nocturnal hypoxemia in COPD. Hence such patients should be evaluated for nocturnal hypoxia.