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

Mr. Mir Shad 103 Ali shadphysi@yahoo.co.in ¹, Dr. Deepak 104 Talwar dtlung@hotmail.com MD ¹ and Mr. Ritesh 105 Singh Ritesh_singh007@rediffmail.com. ¹ Metro Centre for Respiratory Diseases, Metro Hospital and Heart Institute, Noida, UP, India, 201301.

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.