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Title: Reduced exertional dyspnea with supplemental oxygen in patients with COPD – Characteristics of responders and non-responders

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Body: Introduction: Ambulatory oxygen is recommended for COPD patients who desaturate during activity, and who experience subjective effect of oxygen supplement. COPD patients with no former oxygen treatment admitted for rehabilitation were referred to extended testing if oxygen saturation measured by pulse oximetry (SpO₂) during 6-minute walk test (6MWT) fell below 88%. Aim: Our study aimed at identifying characteristics that differed between patients who experienced subjective effect of oxygen during constant load treadmill test and those who did not. Methods: Lung function was measured and expressed in % of reference values. Two 5 min constant load treadmill tests were performed at a speed just below 6MWT to mimic walking speed in daily activity. Arterial bloodgas samples were drawn before stop. Dyspnea was measured on Borg CR10 scale. Blinded and in random order, patients received oxygen supplement 6 L/min or placebo air administered continuously through nasal catheter. Results: 27 of 39 patients rated their dyspnoea at least 1 Borg unit lower with oxygen than without. There were no differences in age (64 (8); 65 (6) p=0,56), FEV₁ (37 (15); 32 (16) p=0,33), RV (193 (74), 171 (88) p=0,46), TLC (115 (40), 107 (49) p=0,66), DLCOVA (38 (15); 37 (23) p=0,94), resting pO₂ (kPa)(8,9 (0,6); 8,8 (0,9) p=0,92), nadir pO₂ with placebo (6,8 (0,4); 6,5 (0,8) p=0,19), nadir SpO₂ during 6MWT (81(3); 78(5) p=0,10) or pO₂ with oxygen (kPa)(10,4 (1,3); 10,9 (1,8), p=0,19) between patients with subjective effect and those without. Conclusion: None of the registered variables were helpful in predicting subjective effect of ambulatory oxygen.