

Chronic Obstructive Pulmonary Disease (COPD) as a risk factor for Metabolic Syndrome (MetS)

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Background: MetS represents a cluster of risk factors (abdominal obesity, atherogenic dyslipidemia, hypertension and insulin resistance) that predispose affected patients to systemic inflammation, cardiovascular disease and physical inactivity. COPD is a major health problem worldwide, the fourth leading cause of death with prevalence in increase. There is a limited data about the prevalence of MetS in COPD. The aim of the study is to determine the frequency of coexisting MetS in COPD.

Methods: Case control study of 120 patients with COPD (82 men and 38 women, aged 40-75 years, mean age 64.2 ± 10.4), diagnosed according to Global Initiative for Chronic Obstructive Lung Disease, 30 healthy non-COPD subjects, randomly selected as controls. Anthropometric measurements, fasting blood sugar (FBS), lipid profile, high-sensitivity C-reactive protein (hsCRP), spirometry, CAT (COPD assessment test) and mMRC (Modified Medical Research Council Dyspnea scale) questionnaires, were assessed. COPD subjects were stratified based on combined assessment test (ABCD criteria) and spirometry (stages I - IV).

Results: The presence of MetS was diagnosed in 50(41.67%) of COPD patients vs. 5(16.67%) of controls ($p=0.01$). The frequencies of the MetS in patients with COPD, GOLD stages I, II, III, and IV, were 50(41,67%), 66(55%), 60(50%), 42(35%) respectively. Frequency of MetS according to combined assessment test (A, B, C, D) was 42(35%), 54(45%), 25(30%), 36(30%) respectively. The presence of MetS was associated with significantly worse cough, sleep and mood ($p<0.01$) and higher total CAT score ($p=0.031$). Average BMI was 29.18. There was a correlation between the presence of MetS and hs-CRP ($p=0.02$) and no correlation with the pulmonary function. FBS was higher in COPD than controls (8.5 ± 1.2 mmol/L vs 5.4 ± 1.1 mmol/L) with statistical significance ($p<0.0001$), but HDL was lower in COPD than controls (42.1 ± 5.4 mg/dl vs 53 ± 3.6 mg/dl) with statistical significance ($p<0.0001$). Waist circumference and blood pressure were higher in COPD than controls 93.8 ± 2.4 m vs. 92.3 ± 3.1 sm, $p=0.004$, and mean systolic BP 135 ± 10 mmHg vs. 113.5 ± 8.1 mmHg, $p < 0.0001$.

Conclusion: The high prevalence of MetS in patients with COPD show the urgent need to develop comprehensive strategies for prevention, screening and start of treatment in early stage. Correction of the MetS may have a significant role in prevention of complications related with the COPD.