Peripheral artery disease and cardiovascular risk in patients with chronic obstructive pulmonary disease

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KEYWORDS: chronic obstructive pulmonary disease, peripheral artery disease, cardiovascular disease, ankle-brachial index.

CITATION: *Cardiol Croat.* 2017;12(9-10):372. | <https://doi.org/10.15836/ccar2017.372>

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Introduction: Chronic obstructive pulmonary disease (COPD), peripheral arterial disease (PAD) and ischemic heart disease are considered to be a smoking-related triad. PAD is a progressive, atherosclerotic process that indicates an increased risk for ischemic heart disease and can be assessed in clinical practice by calculating ankle-brachial index (ABI). COPD has been recognized as a systemic disease, and is associated with a markedly increased risk of cardiovascular disease independent of classical risk factors.^{1,2} Our goal was to examine the relationship between COPD and PAD using a prospective study.

Patients and Methods: Total of 171 patients were included in this study, of which 75 were healthy non-smokers, 55 control smokers and 41 COPD subjects with smoking history. We measured ankle-brachial index (ABI) as a marker of atherosclerosis of the legs with a cutoff value of less than 0.9, pulmonary function with spirometry, calculated SCORE Risk chart and smoking pack-years. Spearman's rank test was used to examine correlations between the variables. The differences in continuous variables were evaluated using two sampled Student's t test. P-values < 0.05 were considered statistically significant.

Results: ABI was significantly lower in the COPD patients than in the healthy control smokers ($t=2.89$, $p < 0.01$). The prevalence of ABI < 0.9 was significantly higher in the COPD group than in the control group (26.4% vs 12.8%). Smoking status and pack-year histories, age, sex distribution and total cholesterol levels were similar between the two groups. ABI correlated significantly with age ($r = -0.23$, $p = 0.05$), total cholesterol levels ($r = 0.54$, $p = 0.05$), systolic blood pressure ($r=0.44$, $p=0.01$) and smoking pack-years ($r = -0.24$, $p = 0.05$).

Conclusion: The risk of leg atherosclerosis in COPD patients in our study was higher than in smokers without COPD. In this study we showed that the prevalence of undiagnosed PAD was high in COPD patients, a rate higher than that of matched healthy control smokers. Our study may indicate that COPD as a chronic inflammatory state promotes atherosclerosis and holds a greater risk for ischemic heart disease, ischemic stroke and death independent of classical risk factors. This study showed that attention should be paid to the risk of cardiovascular diseases in COPD patients.

RECEIVED:
September 9, 2017

ACCEPTED:
September 26, 2017

LITERATURE

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