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COPD as a risk factor for Low-Extremity Artery Disease


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Abstract

The aim of this study is to explore the connection between chronic obstructive pulmonary disease (COPD) and low-extremity artery disease (LEAD), to assess its link to the severity of airflow limitation and serum CRP level.

Prospective cross-sectional study of 220 newly diagnosed patients with stable COPD Investigated Group (IG), aged 40–75 years, and 58 control subjects (CG) without COPD,

matched by age, gender, BMI, and smoking status. All participants underwent lung function tests, Doppler ultrasound of the lower extremities arteries, and serum CRP measurement.

Doppler findings were classified as normal, initial atherosclerotic plaques without stenosis, more severe atherosclerotic plaques without stenosis and stenosis. Results showed that the frequency of LEAD in COPD patients was 197(89.55%) vs. 58(100.0%) in CG. The prevalence of stenosis in IG was significantly higher than CG, 59(26.82%) vs. 1(1.72%), $p=0.000003$. In COPD patients, stenosis was significantly higher with FEV1 decline and was diagnosed in 19(38.78%) of GOLD4 cases, 23(44.23%) of GOLD3, 15(24.19%) of GOLD2, and 2(3.51%) of GOLD1 stage. According to the Fontaine classification, COPD patients with LEAD were categorized into stage I - 66(40.74%), stage IIA - 58(35.8%), and stage IIB - 38(23.46%), while all control subjects with LEAD, were in stage I. Among COPD patients with LEAD, there was a strong association between disease severity and clinical symptoms caused by vascular changes ($p=0.001$), as well as with serum CRP levels ($p<0.05$).

This study concludes that the presence of peripheral artery disease even in the early COPD stages, requires development of comprehensive strategies for prevention, screening and early treatment.

Footnotes

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This article was presented at the 2025 ERS Congress, in session “When the heart meets the lungs: cardiovascular impacts of pulmonary and post-COVID conditions”.

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