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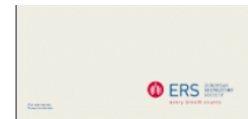
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## Abstract

We investigated the association between chronic obstructive pulmonary disease (COPD) and carotid artery disease (CAD), as well as the relation to airflow limitation severity and serum C-reactive protein (CRP) levels.

This cross-sectional study included 220 newly diagnosed patients with stable COPD as Investigated Group (IG), aged 40–75 years, and 58 non-COPD subjects as Control Group (CG), matched by gender, age, BMI, and smoking status. All participants underwent lung function tests, Doppler ultrasound of the carotid arteries, and serum CRP measurement.

Results showed a higher frequency of CAD in the COPD group compared to the control group 21(9.55%) vs. 1(1.72%),  $P=0.0052$ . In COPD patients, CAD was present in 8(16.33%) of GOLD4 cases, 5(9.62%) of GOLD3, 6(9.68%) of GOLD2, and 2(3.51%) of GOLD1.

Doppler findings were classified as normal, intima-media thickening (IMT), mild stenosis (1%–39%), moderate stenosis (40%–59%), and severe stenosis (60%–79%). No patients had critical stenosis (80%–99%). IMT was more common in the COPD group than in the control group 106(48.2%) vs. 15(25.9%),  $P=0.0023$ . The mean IMT value in COPD patients with CAD was significantly higher than in the control group with CAD ( $0.8\pm 0.2$  vs.  $0.6\pm 0.1$ ,  $P=0.0043$ ). IMT in COPD patients was strongly linked to lower FEV1 ( $P=0.000$ ) and higher CRP levels ( $P=0.001$ ). COPD patients had a 2.66 times higher risk of IMT compared to the control group (OR=2.66, 95% CI: 1.39–5.08).

The study found that vascular changes in COPD patients were strongly associated with disease severity and inflammation levels. The presence of CAD, even in early COPD stages, highlights the need for prevention, screening, and early treatment.

### Footnotes

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This article was presented at the 2025 ERS Congress, in session “The bigger picture: comorbidities and cross-treatment effects in airway disease”.

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