

[P1849] Remodeling of bronchial and pulmonary muscular arteries in mild/moderate COPD

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Pulmonary hypertension is well documented in severe COPD but little is known about vascular remodeling in mild/moderate patients.

Aim: To investigate bronchial and pulmonary muscular arteries morphology and the expression of elastic fibers (EF) and collagen I in the lungs of mild/moderate COPD patients.

Methods: Lung tissue of 18 COPD subject (FEV1: $67 \pm 15\%$ pred), 14 non-obstructed smokers (NOS) (FEV1: $95 \pm 10\%$ pred) and 11 never-smoking controls (CTRL) (FEV1: $108 \pm 15\%$ pred) was used to analyze the morphology of bronchial and pulmonary muscular arteries and the expression of EF and collagen I in the tunica intima, media and adventitia, using immune- and histochemistry and image analysis. Values (mean $\pm$ SD) were expressed as (stained) area/vessel outer perimeter ($\mu\text{m}^2/\mu\text{m}$) and as staining density (collagen I).

Results: The intimal areas of pulmonary (CTRL = 8.87 ± 4.3 , COPD = 14.7 ± 5 , $p = 0.04$) and the adventitia of bronchial arteries (CTRL = 27.7 ± 11.4 , COPD = 50.6 ± 23.7 , $p = 0.007$) were larger in COPD patients than in CTRL. Higher EF expression was observed in adventitia of bronchial arteries of NOS group (8.8 ± 13.2) than CTRL (3.1 ± 1.3 , $p = 0.04$). The CTRL group had higher collagen I staining density in the adventitia of bronchial (CTRL = 81.6 ± 35.8 ; NOS = 32.8 ± 15 ; COPD = 40.9 ± 25.4 , $p = 0.002$) and pulmonary (CTRL = 96.5 ± 23.2 ; NOS = 54.8 ± 24 ; COPD = 69.6 ± 19.1 , $p = 0.0005$) arteries than NOS and COPD. Within COPD group, negative correlations were observed between the intimal area of pulmonary arteries and FEV1 ($R = -0.57$, $p = 0.04$) and FEV1/FVC ($R = -0.56$, $p = 0.04$).

Conclusions: Remodeling of bronchial and pulmonary muscular arteries occurs in mild/moderate COPD, is associated with impaired lung function and it might contribute to the development of pulmonary hypertension.

Session: Poster Discussion: Mechanisms of COPD: proteases and a whole lot more

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Room: Room M-2 (B0)

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