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**Title:** Glomerulopathy, microvascular damage and aortic stiffness in patients with COPD

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**Body:** Background: The increased aortic stiffness in patients with COPD will lead to increased pulsatile energy which may in turn damage the microvasculature. The renal vascular bed is particularly susceptible. We hypothesised that urine albumin creatinine ratio (UACR) as a measure of glomerular damage would be related to aortic stiffness: pulse wave velocity (PWV). Methods: Subjects with and without COPD, all with >10 pack year history of smoking had aortic PWV, BP, oxygen saturations, spirometry as well as urine for renal biomarkers measured at clinical stability. Results: Age, gender and BMI were matched between patients, n=52 and controls, n=34. The UACR was increased in patients compared to controls, p<0.05, Figure 1 (median and IQR). Log<sub>10</sub> UACR was related to aortic PWV (r=0.43, p<0.001). Mean eGFR was similar between groups but low (<60mls/min) in 29% of each group. Biomarkers of proximal tubular damage (NGAL and KIM-1) standardised for urine concentration were not different between patients and controls. In multiple regression, aortic PWV and oxygen saturations were the independent variables of log<sub>10</sub>UACR in all subjects and also in patients with COPD alone (other variables entered included MAP, FEV<sub>1</sub>, age, gender, BMI, pack years). Conclusions: There is glomerular damage in patients with COPD, consistent with microvascular damage which is related to aortic stiffness.