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Title: Plasma MMP-9 is related to a bronchitic COPD phenotype – Report from the obstructive lung disease in Northern Sweden (OLIN) studies

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Body: Background Several studies acknowledge the importance of inflammation in the development of COPD. However, regarding potential systemic inflammatory biomarkers that may correlate to disease severity, more studies are needed. Aim The aim was to assess the relationships between FEV1, COPD, CPC (chronic productive cough) and two putative inflammatory biomarkers in blood plasma. Methods The OLIN COPD study comprised 993 subjects with FEV1/FVC <0.70 (COPD) and 993 age- and gender-matched non-COPD subjects identified in 2002-2004 from population-based cohorts. In 2005, all 1986 subjects were invited to a clinical examination where spirometry, structured interview and blood samples were obtained. Quantification of MMP-9 and TIMP-1 was performed with ELISA (n=1621 samples). Results MMP-9 was significantly higher in COPD compared with non-COPD (median 612 vs. 550 ng/ml; p=0.029). In univariate analysis, FEV1 (% predicted) was inversely associated with MMP-9 (r=-0.141; p=<0.001). Further, MMP-9 levels were higher (p=<0.001) in patients with both COPD and CPC (666 ng/ml) compared to those with neither COPD nor CPC (539 ng/ml). Conclusions Results indicated that MMP-9 was increased in COPD and inversely related to FEV1. MMP-9 levels were further increased in COPD patients with CPC, indicating an enhanced systemic inflammatory response in patients with a bronchitic phenotype and thus, an increased risk of exacerbations. Additional analysis will contribute to the evaluation of these biomarkers in relation to other predictors and to disease severity in COPD.