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Title: PTX3 a marker of innate immune responses in the airways of asthmatics and COPD patients

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Body: Background: Pentraxin 3 (PTX3) is a multifunctional pattern recognition protein and an important component of the innate immune system. Its role in airway diseases has been scarcely studied and remains undetermined. Objectives: To investigate whether PTX3 measured in induced sputum (IS) discriminates patients with chronic obstructive pulmonary disease (COPD), asthma and healthy controls, and its association with functional abnormalities, IS cellularity and smoking (pack/years). Methods: IS was obtained from 27 participants with COPD, 25 asthmatics and 16 healthy controls. IS was processed for total (TCC) and differential cell counts. PTX3 in IS supernatant was measured in duplicates by ELISA (limit of detection = 0.15 ng/ml). Results are expressed as median and 10-90 percentiles or otherwise as stated. Results: PTX3 was detected in 88,9% of patients with COPD, 56,0% of asthmatics and in 18,8% of controls (p=0.001). It discriminated participants with COPD [24.6 (0-384) ng/mL] from controls [0 (0-36) ng/ml, p<0.001] and from asthmatics [1.2 (0 -100) ng/ml, p= 0.01]. Strong correlations were observed between PTX3 and sputum TCCx106/mg (r=0.482, p<0.001), neutrophils% (r= 0.355, p= 0.003) and smoking (r=0.425, p<0.001). There was a strong negative correlation between PTX3 and FEV1% (r=-0.446, p<0,001), and VEF1/FVC ratio (r=-0.514, p<0.001). Correlations between the above parameters per study groups showed that in COPD group PTX3 was inversely correlated with FEV1% (r=-0.390, p=0.04), and VEF1/FVC ratio (r=-0.362, p=0.05). Conclusion: PTX3 is discriminative of patients with COPD and asthma. Its association with functional abnormalities suggests that PTX3 may be important in the pathogenesis of COPD.