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Title: Correlation between sputum cytology and lung physiology in asthma and COPD subjects in Indian population

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Body: Airway cellular inflammation is known to contribute to the pathophysiological consequences of asthma and COPD; however, the differences in their profile and association with lung function parameters have not been investigated in Indian population. We aimed to investigate the relationship between inflammatory cellular profile and lung functions in asthma and COPD. Methods: 25 asthma & 29 COPD patients underwent pre/post spirometry in accordance to ATS/ERS criteria & sputum induction with 3% hypertonic saline, processed with 0.1%DTT to investigate cellular inflammatory profile in their airways. Results: A significant difference was observed between COPD & asthma in total median neutrophil counts [113.6 (IQR:65.4, 161.8) x106/g vs 5.9 (IQR:0.1, 30.2) x106/g, p=<0.0001] & lymphocytes [8.5 (IQR:0.2, 84.0) x106/g vs 1.2 (IQR:0.2, 4.4) x106/g, p=0.02]. There were no significant difference between the 2 groups in absolute eosinophil count (p=0.12). However, the mean eosinophil was 23.3% ± 24 in asthma & 7% ± 8.5 in COPD (p=0.006). There was a negative correlation between the % neutrophils and FVC in asthma (r=-0.478, p=0.02), while in COPD there was a negative correlation between % eosinophils & FVC% (r=-0.380, p=0.05) & between absolute eosinophil count and FEV1% (r=-0.380, p=0.05). There was a positive correlation between absolute eosinophil count and duration of COPD (r=0.391, p=0.04) and between absolute macrophage count and FEF25-75/FVC in COPD (r=0.490, p=0.01). Conclusion: This study showed that presence of neutrophils were related to greater loss of lung volumes in asthma while presence of eosinophils was related to COPD disease severity and duration among Indian subjects.