Commentary

Obese COPD is associated with higher systemic inflammation – A new COPD phenotype

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Chronic obstructive pulmonary disorder (COPD) is the third most common cause of death in the world and fifth in South Asia and ninth on the list of years of life lost.[1,2] The total mortality due to COPD continues to increase in most parts of the world.[1] The prevalence of COPD is increasing in many parts of the world and a systematic review estimated the prevalence between 6.5 to 7.7% in India.[3]

Biomass smoke exposure[4] and Tobacco smoking are both important risk factors for COPD with 3 billion people in the world exposed to biomass fuels and about 1 billion exposed to tobacco smoke.[5] Biomass exposure leads to COPD with similar symptoms, lung function abnormalities, quality of life scores, exercise capacity and health care utilization similar to COPD secondary to tobacco smoke including similar survival.[6] An elegant study demonstrated that the lung morphology in necropsies of COPD due to biomass fuel exposure or tobacco smoking in women are very similar with minor differences; tobacco smokers had more emphysema and goblet cell metaplasia and biomass fuel exposure led to greater fibrosis and scarring in small airway walls and pigment deposition.[7]

It is believed that systemic inflammation is an important aspect of COPD that is associated with deleterious outcomes. A large study including 1755 COPD patients, 297 smokers without COPD and 202 normal subjects that evaluated 6 important inflammatory mediators (including IL6, IL8, TNF – alpha, fibrinogen, CRP, WBC counts) observed that there were specific phenotypes among COPD patients that was associated with systemic inflammation.[8] An important aspect of this study was a repeat of the levels of inflammatory mediators a second time during the study and a longitudinal follow-up of 3 years. The study revealed important learning points. For similar levels of airflow limitation, there are some patients with COPD who do not have systemic inflammation as evidenced by normal levels of these six inflammatory markers. Patients with systemic inflammation were more likely to be obese and have higher dyspnea scores, poorer quality of Life, higher BODE index, poorer exercise capacity, higher exacerbation rates, higher cardiovascular disease and higher all-cause mortality than COPD patients who did not have systemic inflammation.

Agusti *et al* in the ECLIPSE study observed that 30% of COPD patients did not have any systemic inflammation both at baseline and on follow-up after one year. These COPD patients had similar levels of airflow limitation as COPD patients with systemic inflammation. Systemic inflammation was observed more commonly in COPD patients who were obese. Non-obese patients without systemic inflammation are therefore likely to be one of the COPD phenotypes with better outcomes. The ECLIPSE study found higher levels of inflammatory markers were associated with poorer exercise capacity as evidenced by the 6-minute walk distance (6MWD), but found higher levels of inflammation in obese COPD patients. Obesity itself is associated with higher levels of inflammatory markers[9,10] and ECLIPSE study confirmed that BMI is significantly associated with persistent systemic inflammation.

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