Editorial

Identifying prognostic factors in chronic obstructive pulmonary disease patients

Chronic obstructive pulmonary disease (COPD) is a major cause of mortality worldwide.[1] Baseline disease severity, acute exacerbations of COPD (AECOPD), and a number of comorbidities increase short- and long-term mortality risk.[2-5] Other prognostic factors vary across studies, probably due to differences in analyzed populations, collected variables, and statistical methods. Despite worldwide research on health-care efforts and costs, statistics show an increasing trend in mortality, in contrast with other relevant causes of death.[6] Identifying patients at high risk of death and modifiable predictors of mortality is therefore of importance for both patients and health-care providers, to optimize therapeutic strategies and COPD management.

In this issue of Lung India, Koul *et al*.[7] reported a prospective observational study conducted in a tertiary care hospital to determine the postdischarge mortality of patients surviving an AECOPD and analyze factors associated with mortality. The investigators reported 151 patients who were discharged after a hospital admission due to AECOPD (64% male, mean age 65 years). These patients were managed with oxygen, steroids, bronchodilators, antibiotics, and invasive or noninvasive ventilation. About 32.4% died during 1 year and 39.7% at 2 years of follow-up. The factors associated with mortality were lower health status (St. George's Respiratory Questionnaire [SGRQ] score >60), heart failure, worse lung function (GOLD), 6-min walk distance (6MWD) <150 m, and frequent exacerbations. Despite the study was carried out in a single center, some of the results reported are consistent with recent publications. Koul *et al*.[7] reported that COPD mortality was 39.7%. Previous studies on long mortality for COPD have shown a 2-year mortality from 27.9% to 85.5%.[8-11]

Comorbidities and lung function seem to be strongly associated with COPD mortality.[3,12] COPD is often accompanied by relevant comorbidities such as hypertension, heart failure, atrial fibrillation, ischemic heart disease, cerebrovascular accident, diabetes, chronic kidney or liver disease, cancer, dementia, depression, anxiety, and lower body mass index.[3,13] Frequently, its prevalence is bigger than expected,[14] and multiple comorbidities had accumulative effect on mortality.[15] However, the underlying causes of multimorbidity in COPD are not yet completely recognized. Cardiovascular comorbidities and COPD share similar risk factors and common pathophysiological mechanisms.[16] Heart disease, hypertension, and diabetes are associated with increased systemic inflammation,[15] and the presence of systemic inflammation, evaluated for selected biomarkers, adds prognostic value and establishes clinical variables to predict mortality in COPD.[17] Data in the ECLIPSE study identified five COPD subgroups that differ in outcomes and inflammatory biomarkers.[18] Comorbidity associated with COPD is partially responsible of increased mortality, and patients hospitalized for AECOPD ranked high in the Charlson scale and had lower survival rates.[19] This fact implies that there is a need to identify those comorbidities which are more strongly associated with an increased risk of death in COPD patients. However, the management of major chronic co-morbidities in COPD patients is not clearly established.

Among patients with COPD, lower health status was associated with an increased risk of adverse outcomes including death.[20] Koul *et al*.[7] measured the relationship between baseline health status and mortality using the SGRQ and showed that COPD patients having SGRQ >60 had higher mortality than those with SGRQ scores of ≤60. A previous study by Müllerova *et al*.[21] confirmed that baseline SGRQ status predicts mortality risk, suggesting health status measurement provides additional prognostic information independent of other factors.

The increased mortality in COPD patients is related with frequency and intensity of AECOPD, especially those exacerbations requiring hospitalization.[2] The risk of death is bigger in those with a greater number of exacerbations per year. Koul *et al*.[7] report that frequent exacerbations occurred in 31.8% of COPD patients, and frequent exacerbations were related to the severity of COPD according to the GOLD stage. Decreased FEV1 and static hyperinflation predict exercise capacity and both had been associated with increased mortality.[22,23] 6MWD is a variable derived from the 6-min walking test,[24] commonly used to assess functional exercise capacity in patients with COPD. A 6MWD <350 m has been shown to independently predict mortality in COPD patients.[25,26] Koul *et al*.[7] confirm that 6MWD will help to identify COPD patients at risk of death.

The current study by Koul *et al*., taken together with data from other cohorts, highlights the need to identify patients with very poor prognosis potentially requiring more careful attention.

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Website: www.lungindia.com

DOI: 10.4103/lungindia.lungindia_354_17

How to cite this article: Garcia-Sanz MT. Identifying prognostic factors in chronic obstructive pulmonary disease patients. Lung India 2017;34:497-8.