

Chronic obstructive pulmonary disease exacerbation frequency and severity

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Dear editor

We read with great interest the original work by Motegi et al¹ comparing three multidimensional assessment systems – BODE (body mass index, obstruction, dyspnea, and exercise capacity) index, DOSE (dyspnea, obstruction, smoking, exacerbations) index and ADO (age, dyspnea, obstruction) index – for predicting COPD (chronic obstructive pulmonary disease) exacerbations. In this study, exacerbation rates for the first and second year were 0.57 and 0.48 per patient-year respectively, while previous exacerbations, DOSE index, FEV₁% (% forced expiratory volume in 1 second) predicted and long-term oxygen therapy (LTOT) use were shown to be predictors of COPD exacerbations. However, this study seems to have quite different results from our own study that focused on exacerbation frequency and severity.

In our study, we examined COPD exacerbations in the general population with the aim of determining potential risk factors. We studied the frequency and severity of COPD exacerbations in patients who visited the Respiratory Medicine Clinic at University of Thessaly Medical School on an outpatient basis between March 2012 and April 2013. Our study included only patients with COPD confirmed by a spirometry test and aged over 40 years. Patients with other respiratory diseases were excluded from the study. All patients took a spirometry test, had their medical history recorded, and a physical examination was performed. In the study 106 patients participated (91.5% male), with an average age of 71.48±8.72 years (mean ± standard deviation), with 40.6% classified as smokers, 56.6% ex-smokers and 2.8% non-smokers. According to GOLD (Global initiative for chronic Obstructive Lung Disease) classification 12.3% of patients were stage I, 39.6% stage II, 34.9% stage III and 13.2% stage IV. 25.5% were assessed in patient group A, 13.2% in group B, 25.5% in group C and 35.8% in group D.

In total, 175 exacerbations were recorded (1.65 exacerbations per patient-year). Exacerbation rates were 1.64 for stage I patients, 1.36 for stage II, 1.62 for stage III and 2.69 for stage IV. During the past year 36.8% of the patients reported frequent exacerbations (≥2 per year). Overall, 35.7% of patients with stage I disease, 28.6% of patients with stage II, 35.1% with stage III, and 69.2% with stage IV had frequent exacerbations. According to exacerbation severity, 16.6% were mild, 38.9% were moderate, and 44.6% had severe exacerbations. For the treatment of moderate and severe exacerbations 15.4% visited a doctor, 23.4% visited a primary health center or an emergency department, and 44.6% were hospitalized. The treatment of COPD

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exacerbations was solely with antibiotics in 42.9% of patients, solely with systemic corticosteroids in 6.5% of patients, and 50.6% of patients were treated with both antibiotics and corticosteroids. The main risk factor for frequent exacerbations was chronic cough (OR [odds ratio]: 2.62; 95% CI [confidence interval]: 1.15–5.97; $P=0.02$), while age, years with COPD, and frequent exacerbations appeared to be associated with severe exacerbations.

Our exacerbation rate agrees with Miravittles et al,² who mentioned 1.5 COPD exacerbations per patient-year. This study used a symptom-based definition of exacerbation without using daily diaries, such as our study did. Other symptom-based studies, including diaries, have shown higher rates (2.4–2.7).^{3–5} Our study has shown that a significant percentage of COPD patients experience frequent exacerbations (≥ 2 /year) and corresponds with the ECLIPSE study,⁶ which also cited similar results. Moreover, most of our patients experienced moderate and severe exacerbations leading to the need for health care, and many of them were finally hospitalized. The epidemiology survey EPIPTOSI⁷ in Greece also reported significant use of health services for COPD exacerbations, while in other health care systems huge differences were noticed.⁸ Finally, exacerbation frequency appears to be associated with clinical factors, such as chronic cough, which was also mentioned in the ECLIPSE study,⁶ but it was not associated with other symptoms or LTOT.

Disclosure

The authors report no conflicts of interest in this communication.

References

1. Motegi T, Jones RC, Ishii T, et al. A comparison of three multidimensional indices of COPD severity as predictors of future exacerbations. *Int J Chron Obstruct Pulmon Dis*. 2013;8:259–271.
2. Miravittles M, Ferrer M, Pont A, et al; for the IMPAC Study Group. Effect of exacerbations on quality of life in patients with chronic obstructive pulmonary disease: a 2-year follow up study. *Thorax*. 2004;59:387–395.
3. Seemungal T, Donaldson GC, Paul EA, Bestall JC, Jeffries DJ, Wedzicha JA. Effect of exacerbation on quality of life in patients with chronic obstructive pulmonary disease. *Am J Respir Crit Care Med*. 1998;157:1418–1422.
4. Seemungal T, Donaldson GC, Bhowmik A, Jeffries DJ, Wedzicha JA. Time course and recovery of exacerbations in patients with chronic obstructive pulmonary disease. *Am J Respir Crit Care Med*. 2000;161:1608–1613.
5. Wilkinson T, Donaldson GC, Hurst JR, Seemungal T, Wedzicha JA. Early therapy improves outcomes of exacerbations of chronic obstructive pulmonary disease. *Am J Respir Crit Care Med*. 2004;169:1298–1303.
6. Hurst JR, Vestbo J, Anzueto A, et al. Susceptibility to exacerbation in chronic obstructive pulmonary disease. *N Engl J Med*. 2010;363:1128–1138.
7. Carvounis CP, Nikas N, Panitti E. Epidemiological survey in primary care patients with chronic obstructive pulmonary disease in Greece; The EPIPTOSI study. *Pneumon*. 2012;25(4):386–394.
8. Mittmann N, Kuramoto L, Seung SJ, Haddon JM, Bradley-Kennedy C, FitzGerald JM. The cost of moderate and severe COPD exacerbations to the Canadian healthcare system. *Respir Med*. 2008;102:413–421.

Authors' response

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We thank Stafyla et al for their interesting data providing insights into exacerbation rates and for their comments on our article titled "A comparison of three multidimensional indices of chronic obstructive pulmonary disease severity as predictors of future exacerbations."

In response to the query put forward by Stafyla et al, the frequency of exacerbation in our study¹ was 0.48–0.57 events per patient-year, which was lower than that reported in previous research such as the TORCH² or UPLIFT³ studies. We agree and have commented that this is different to other populations which have higher rates. The fact that the exacerbation rate and the DOSE (dyspnea, obstruction, smoking, exacerbations) index are important predictors of future exacerbations in a population with a low exacerbation rate is an important conclusion.

Although exacerbations become more frequent and severe as COPD progresses, the rate at which they occur appears to reflect an independent susceptible phenotype.⁴ In addition to such genetic factors, there might be other factors responsible for these differences. The smoking rate of current smokers in the data put forward by Stafyla et al was 40.6%, whereas the same was found to be 4.4% in our study.¹ In the management of patients with COPD, continuous education on smoking cessation is essential to avoid repeated exacerbation.

According to several research articles on the lower exacerbation rate in Japanese patients with COPD, the latest COPD guideline in Japan (*Japanese Respiratory Society, Guidelines for the Diagnosis and Treatment of COPD, 4th edition, 2013*) does not adopt the severity assessment system that comprises of categories A, B, C, and D in the new Global initiative for chronic Obstructive Lung Disease (GOLD),⁵ since they are divided into two groups according to the exacerbation rate of more or less than 2 events per patient-year, which is not appropriate in Japan.

Once again, we greatly appreciate the efforts taken by Stafyla et al in pointing out the issues with the article in order to grasp the deeper meaning of the rate difference, which clearly requires further research. However, we again emphasize that prediction of exacerbation is essential to manage patients with COPD using a multidimensional assessment system.

Disclosure

The authors report no conflicts of interest in this communication.

References

1. Motegi T, Jones RC, Ishii T, et al. A comparison of three multidimensional indices of COPD severity as predictors of future exacerbations. *Int J Chron Obstruct Pulmon Dis.* 2013;8:259–271.
2. Calverley PM, Anderson JA, Celli B, et al; TORCH investigators. Salmeterol and fluticasone propionate and survival in chronic obstructive pulmonary disease. *N Engl J Med.* 2007;356:775–789.
3. Tashkin DP, Celli B, Senn S, et al; UPLIFT Study Investigators. A 4-year trial of tiotropium in chronic obstructive pulmonary disease. *N Engl J Med.* 2008;359:1543–1554.
4. Hurst JR, Vestbo J, Anzueto A, et al; Evaluation of COPD Longitudinally to Identify Predictive Surrogate Endpoints (ECLIPSE) Investigators. Susceptibility to exacerbation in chronic obstructive pulmonary disease. *N Engl J Med.* 2010;363:1128–1138.
5. Vestbo J, Hurd SS, Agustí AG, et al. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: GOLD executive summary. *Am J Respir Crit Care Med.* 2013;187:347–365.

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