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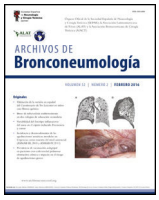

Editorial

Promoting Physical Activity After Hospitalization for Chronic Obstructive Pulmonary Disease Exacerbation☆

Promoción de la actividad física tras un ingreso hospitalario por exacerbación de la enfermedad pulmonar obstructiva crónica

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Chronic obstructive pulmonary disease (COPD) is a disease that fluctuates between periods of relative stability and episodes during which the patient experiences sustained clinical worsening, known as exacerbations.[1] Severe exacerbations that require hospital treatment impact negatively on the health of these patients.[2–6] Their physical activity decreases dramatically during these events and remains significantly lower than that of stable patients 1 month after hospital discharge.[2] Peripheral muscle strength, particularly in the lower limbs, also declines considerably during a severe COPD exacerbation.[3] Moreover, longitudinal studies have revealed that both physical activity and exercise capacity diminish over time in patients who are hospitalized at least once during follow-up.[4,5] Recently, a validation study of the vicious circle of dyspnea-inactivity associated with COPD, using real data from patients in 2 European cohorts, revealed that both moderate and severe exacerbations play a significant role in this process, and help explain the clinical course of the disease.[6] Taking into account the importance of physical activity and exercise capacity in COPD prognosis,[7] interventions aimed at alleviating the negative effects of hospitalization on these parameters are essential in the early stages, and during and after these events.

In recent decades, evidence on respiratory rehabilitation (which mainly involves physical training) during or after a COPD exacerbation has been growing, leading to a number of Cochrane reviews, the latest of which was published in 2016.[8] The results of these reviews suggest that respiratory rehabilitation implemented in the context of an exacerbation increases exercise capacity (62 m [95% CI: 38, 86] in the 6-minute walking test) and quality of life (−7.80 points [95% CI: −12.12, −3.47] in the St. George's Respiratory Questionnaire), reduces the risk of readmission (OR: 0.44; 95% CI: 0.21, 91), and is a safe intervention.[8]

However, the guidelines of the *European Respiratory Society* (ERS) and the *American Thoracic Society* (ATS) on the management of COPD exacerbations published in 2017, made a conditional recommendation against starting respiratory rehabilitation during the hospital stay.[1] It should be noted that this recommendation is based primarily on the results of a study carried out in the UK (n=389) in which a pulmonary rehabilitation program was initiated randomly (1:1) 48 h after hospital admission and continued for a period of 6 weeks after hospital discharge vs conventional care.[9] In this study, included in the Cochrane review of 2016, mortality in the intervention group increased significantly after the fifth month of follow-up. However, bearing in mind that the early rehabilitation program was completed 6 weeks after discharge, the observed difference is unlikely to be attributable to the intervention. The authors also found no differences in mortality when a per protocol/effectiveness analysis was performed (taking into account only patients who completed the treatment assigned in the randomization process), suggesting that patients who actually received the intervention were not the ones who died.

Therefore, taking into account the impact of hospital admissions for COPD exacerbation on the functional capacity of these patients,[4,6] and in the light of the currently available results,[8] it seems essential that respiratory rehabilitation interventions are implemented during or after these events, although it is clear that such interventions should be carefully adapted to the situation and needs of each patient.[10]

Nevertheless, while physical training undoubtedly increases exercise capacity in COPD patients, it does not always lead to a more active life (increased physical activity).[11] This is because, despite the fact that improving exercise tolerance can help patients increase their physical activity,[12] other factors, including personal characteristics, physical or psychological barriers, and motivational, cultural, and social factors, determine the physical activity performed by COPD patients.[13] As such, physical activity has a strong behavioral component. For this reason, respiratory rehabilitation programs must also include other specific complementary strategies to modify inactive behavior, and to encourage these patients to integrate physical activity into their daily life. This

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is of particular importance following severe COPD exacerbations, bearing in mind that inactivity increases during and after these events.[3,5]

Studies have been published that have shown improvements in physical activity in patients with stable COPD when different tools are combined to facilitate behavior change. In this respect, it is important that patients participate actively in setting targets or goals that are personally specific and relevant. Monitoring the progress of physical activity (by using pedometers and diaries, for example) increases patient adherence and the effectiveness of the intervention. We also know that one-off interventions are ineffective, so patients must be guided and accompanied through the process (a method known as coaching), their progress must be assessed, they must receive assistance with barriers and facilitators for performing their physical activity.[14]

In the light of these results, it is reasonable to think that the combination of conventional respiratory rehabilitation programs (e.g., physical training during admission) and interventions that promote a change of behavior (e.g., coaching programs using pedometers after hospital discharge) could be a possible solution to increasing exercise capacity and physical activity in COPD patients after a severe disease exacerbation. In this respect, our working group is conducting a study to assess the effectiveness of an early intervention program that combines these 2 strategies. To summarize, patients are recruited during hospitalization for COPD exacerbation, and they all receive physical training with the aim of enhancing their ability to walk, climb stairs, etc., during admission. After hospital discharge, baseline physical activity is monitored with an accelerometer for a week. Patients return to the clinic for the remaining baseline measurements, and are randomly allocated (1:1) to an intervention to progressively increase their physical activity. This intervention consists of a motivational interview (during which barriers and facilitators for performing physical activity are discussed and the patient actively participates in setting objectives), monitoring of physical activity with a pedometer and schedule, and weekly telephone contacts over a period of 3 months to assist patients with any difficulties they may encounter.[15] In the near future will we know if interventions of this type can reverse the deleterious effects of severe exacerbations on exercise ability and physical activity in patients with COPD.

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