



Editorial

Chronic Domiciliary Oxygen Therapy—Year SEPAR[☆]

Oxigenoterapia crónica domiciliaria: año SEPAR

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Oxygen was the first treatment shown to increase survival in patients with chronic obstructive pulmonary disease (COPD). Current recommendations for the prescription of continuous domiciliary oxygen therapy (CDO) are based on the results of 2 clinical trials published over 30 years ago: the *Nocturnal Oxygen Therapy Trial* (NOTT) and the *Medical Research Council* (MRC) study.^{1,2} CDO is indicated in patients with COPD and resting PaO₂ ≤55 mmHg or resting PaO₂ between 56 and 59 mmHg with evidence of chronic pulmonary hypertension or polycythemia. Based on the hypothesis that the beneficial effect of oxygen is a result of the correction of hypoxemia, irrespective of the cause, this indication has been extended by analogy to chronic respiratory failure caused by other respiratory (idiopathic pulmonary fibrosis, cystic fibrosis, etc.) and non-respiratory diseases (heart failure). However, the effectiveness of continuous oxygen therapy on survival in these other disease entities has not been demonstrated, and studies justifying indication in these cases are required.³

In contrast with the results of the MRC or NOTT clinical trials, supplementary oxygen has not been shown to improve survival in patients with COPD and moderate hypoxemia.⁴ However, these studies have been criticized for reporting a small number of patients, an inappropriately short study period and inadequate average daily administration of oxygen—approximately 13.5 h, clearly insufficient for showing effects on mortality. It is known, for example, that patients with COPD and chronic respiratory failure receiving CDO have a rebound effect, with pulmonary vascular resistance increasing when oxygen is suspended for periods as short as 3 h a day. Moreover, it is clear that the mortality rate in COPD patients with comorbidities is higher. Nevertheless, none of the studies analyzing the effects of CDO evaluate the influence of comorbidities in general or of cardiovascular disease in particular. It is currently unclear if continuous oxygen therapy reduces metabolic and/or cardiovascular death in hypoxemic COPD patients. Current guidelines do not provide any indications for “pure” patients (with no associated comorbidities), and the therapeutic effects of CDO are analyzed in groups that are poorly representative of COPD patients.⁵

Although some data point to a lower survival rate in patients with nocturnal saturations, the role of continuous oxygen therapy in the management of these patients remains controversial. The available data, based on small cohorts, suggest that continuous oxygen supplements do not affect survival in COPD patients with isolated nocturnal desaturations. The findings of studies investigating the effects of oxygen therapy on quality of sleep are limited and conflicting, with one study showing an improvement in sleep quality⁶ and another showing no change.⁷ Thus, although the quality of sleep in COPD patients is known to be poor, the effects of nocturnal administration of oxygen are unknown. Furthermore, oxygen supplements do not appear either to reduce the prevalence of cardiac arrhythmias in patients with nocturnal desaturations or to affect pulmonary hemodynamics, and do not prevent the long-term development of pulmonary hypertension.⁸

Around 30%–40% of COPD patients without hypoxemia or with moderate resting hypoxemia have desaturations during exercise, and this may be a factor for poor prognosis. Oxygen therapy has been shown to increase exercise capacity, at least in the short term, in various chronic diseases. Despite this increase in exercise tolerance, it remains unclear whether oxygen therapy should be prescribed to patients who are hypoxemic only during exercise. Even less information is available on the long-term effects, and some studies have even found that the initial improvement in distance walked is lost over time.⁹ In any event, it seems reasonable to propose the use of oxygen administered by portable systems in appropriately selected cases that do not present very intense changes in arterial blood gases, with a PaO₂ of between 80 and 60 mmHg and a clear reduction in exercise capacity, in whom an acute benefit has been shown on exercise testing and oxygen response. After the selected system is implemented, it would be desirable to confirm that the advantages and benefits persist during daily activities and to show that there is an increase in exercise tolerance and ease in performing the same activities and a reduction in the need for rests, etc.

A recent report from the National Heart, Lung and Blood Institute on long-term oxygen therapy in COPD patients has pointed out the arbitrary nature of the current clinical guidelines for the use of oxygen therapy, the limited size of the trials on which the recommendations are based, the length of time since the available studies were published, the lack of knowledge on the duration of therapy or the appropriate moment for prescribing oxygen and the

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best device for administering oxygen therapy to each individual patient.¹⁰ On the other hand, it is common knowledge that COPD patients often do not use the portable oxygen therapy systems prescribed by their doctors. In another study, patients reported that they very rarely received instructions from their doctors on the use of supplementary oxygen, they did not have a clear idea of the benefits they might gain from oxygen supplements, they were afraid that that device would run out of oxygen during use, and the devices used for ambulatory oxygen were too heavy to carry.³ This would suggest that patients use their oxygen devices less than prescribed, even if light portable units are supplied.

It is clear that despite the long history and widespread use of oxygen therapy, there are still many issues pending clarification. The 2014 SEPAR Year of the Chronic Patient and Domiciliary Respiratory Care could be a good time to address these matters.

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