



Editorial

Domiciliary Respiratory Therapies SEPAR Year 2014. A Real Health Challenge[☆]



Año SEPAR de las terapias respiratorias domiciliarias. Un verdadero desafío sanitario

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This issue of *Archivos de Bronconeumología*¹ contains a review of the role of chronic respiratory therapy in apnea–hypopnea syndrome (SAHS). The aim of this editorial is to emphasize, clarify or expand on some aspects of the review.

At present, it is clear that CPAP achieves significant clinical improvement in symptomatic adult patients, but several uncertainties remain: What happens in mildly symptomatic patients with high apnea–hypopnea index (AHI)? Should the indications be expanded and the number of patients increased? Does CPAP diminish cardiovascular mortality? Is it really cost-effective?

The largest study on the effectiveness of CPAP in mildly symptomatic patients² did not show any reduction in cardiovascular events, except for the subgroup with good compliance, and in another study, something similar was observed in reductions in blood pressure.³ Therefore, although further evidence is needed, these results support extending the indications of CPAP treatment to include mildly symptomatic patients with high AHI, but for this, compliance must be ensured.

Although CPAP moderately reduces blood pressure in patients with SAHS, this cannot be considered an antihypertensive treatment. One study showed that valsartan decreases pressure about 8 times more than CPAP.⁴ However there is enough evidence to declare that CPAP has a role in hypertension control in patients with SAHS, especially in patients with refractory hypertension.⁵ The most important link between SAHS and cardiovascular mortality is hypertension so, if CPAP reduces blood pressure, it should reduce cardiovascular mortality.

Different studies looking at both the diagnostic process and treatment with CPAP or only the latter have shown a good cost/effectiveness ratio, with an ICER (incremental cost-effectiveness ratio) of below €30,000 per QALY.⁶ However, the

published studies include indirect costs (e.g., those derived from decreased cardiovascular events), calculated by extrapolating the therapeutic efficacy of other studies, both observational studies and the few clinical trials available performed in very different populations in terms of geography, anthropometry and severity level. Although it can be concluded that reasonable evidence on the cost-effectiveness of CPAP treatment exists, studies performed in the same cohort followed for at least ten years are still lacking.

CPAP is individually adjusted, since not all patients need the same pressure. The authors of the review¹ describe different methods for determining optimal pressure. Pressure auto-adjustment by autoCPAP devices is now an alternative to polysomnographic titration for most patients. Two aspects deserve further comment: Are all autoCPAP devices equally effective? Can titer be determined simply by a mathematical formula?

AutoCPAP devices have different operating algorithms, so presumably their efficacy differs. The problem is that clinical validation of a specific device quickly becomes obsolete with the emergence of new models within the same brand. Clinical validation studies for every manufacturer and every model are not possible, but new models should be required to have comparative benchmarking with the previous model.

Some studies have shown that similar clinical efficacy between the pressure calculated by a mathematical formula and subsequently adjusted at home (depending on the presence of snoring or apneas) is similar to self-adjusted polysomnographic pressure by autoCPAP.⁷ However, mathematical titration left a higher number of residual events. Therefore, this type of titration may be reserved for patients unable to perform self-titration, despite this being indicated.

We believe that there must be a “minimum” number of hours for obtaining a reduction in cardiovascular risk, although the number of “necessary” hours/day of treatment is not clear. So, how many hours are required? Is there a red line for efficiency? Will the need for compliance monitoring require the allocation of more resources and structures?

We are aware that defining a red line for the number of hours is controversial and depends on the hours of sleep. Although most

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authors consider good compliance as at least 4 h use, two recent papers by Barbé et al.³ and Weaver et al.⁸ suggest that this boundary could be expanded to approximately 6 h, because this delivers a clear reduction in blood pressure in hypertensive patients (*the use of CPAP for 80% of sleep time could be taken as a parameter*). As the rates of non-compliance might soar, we should be innovative in implementing monitoring methods, in order to ensure the sustainability of the health system.⁹ Two key aspects are the need for nurse-led cost-effective monitoring programs in the primary care setting, and the use of telemedicine and/or visits by telephone or computer screen.

As the authors mention,¹ BIPAP has a discrete role in the treatment of SAHS. However, should patients with SAHS and daytime hypercapnia [specifically, the majority of patients with obesity-hypoventilation syndrome (OHS)] be receiving CPAP?

Only one randomized study has been published comparing CPAP and non-invasive ventilation (NIV) in 36 selected patients who had a favorable response to CPAP in a first night of treatment.¹⁰ There were no differences in clinical symptoms or in daytime PaCO₂ between both treatments. There are no long term studies on the occurrence of cardiovascular events or mortality. The results of the Spanish Pickwick multicenter study, with a sample of 440 patients, will probably answer some of these questions. Until more data are available, we would advise initiating CPAP in patients with severe SAHS and OHS and assessing the need for NIV, depending on daytime PaCO₂.

New NIV methods based on automatic systems in which the fan pressure increases depending on the breathing pattern are available but do they add anything to clinical practice?

The arrival on the market of automatic devices has revolutionized titration, and now, even treatment. As the authors rightly discuss,¹ adaptative ventilation support (ASV) is currently more effective than conventional cardiac treatment for reducing IA^H¹¹ and improving heart function, exercise capacity and ejection fraction. If this is confirmed in two large ongoing studies,¹ significant changes in the management of heart failure will result. After 10 years of multiple editorials, the reasons for the lack of consolidation of this treatment are obvious: the absence of appropriate technology, and the need to determine the profile of the patient to be treated.

The use of the ASV modality should focus beyond the field of chronicity¹¹ to include acute situations, pending further studies.

We can and must take advantage of this year 2014, SEPAR Year of Domiciliary Respiratory Therapy, to undertake projects

that benefit the sustainability of the public health system, creating research initiatives to help guide decision-making processes and therefore improve quality. The key may be to look for measurable quality parameters that point us in the right therapeutic direction. In an ever changing world, in which CPAP treatment as we know it remains the “king” of home therapies, new modalities are emerging that allow high impact treatments (heart failure, obesity-hypoventilation syndrome) to be applied. The therapeutic range of domiciliary oxygen therapy could be extended to include important specialties such as cardiology, hand-in-hand with the use of telemedicine, contact with primary care and nurse-led treatment. It seems likely that the whole current algorithm for diagnosis, treatment and monitoring of CPAP will change.

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