

Appraisal

Correspondence: High positive airway pressure could shorten the drainage period in haemothorax but not physiotherapy intervention

Dos Santos et al conducted a thorough randomised controlled trial with high methodological quality,¹ in which they attempted to evaluate whether mobilisation and respiratory techniques shorten the drainage period and length of hospital stay in patients with pleural effusion. Their second objective was to evaluate whether such a strategy combined with continuous positive airway pressure (CPAP) could further improve the benefits. They compared three groups (ie, standard care versus physiotherapy techniques versus physiotherapy techniques and CPAP set at 15 cmH₂O) and concluded that the combination of CPAP with physiotherapy techniques reduced the duration of chest drainage and length of hospitalisation.

With these conclusions, the authors give the impression that physiotherapy interventions had an independent effect on the resolution of pleural effusions and that adding CPAP may have provided a supplemental benefit. However, looking at the reported results one could argue that the implementation of respiratory physiotherapy interventions (including incentive spirometry, airway clearance techniques and walking 100 metres) in patients with pleural effusion did not have any added value. Indeed, the results clearly showed no clinical or statistical difference between the participants who received physiotherapy and those who received standard care. In fact, only CPAP seemed to provide a beneficial effect, since the participants in experimental group 2 (physiotherapy and CPAP) had fewer days of thoracic drainage compared with those in experimental group 1 (physiotherapy alone) or those in the control group.

Another relevant point is the strikingly high prevalence of pleural effusions due to traumatic causes (94%) in their cohort. This should be taken with caution, as haemothorax is not comparable or managed comparably to other causes of pleural effusion.² Moreover, it would have been relevant to report the baseline volume of the pleural effusion, as this would have enabled comparison of the daily amount of liquid drained in each group.

Finally, the population was younger compared with a standard population presenting with non-malignant pleural effusions.³ This is presumably linked to the fact that pleural effusions were mainly caused by thoracic trauma. Yet, the authors concluded that the use

of CPAP therapy at 15 cmH₂O showed good tolerability and can be safely integrated into clinical practice. This would be true in young men with haemothorax but cannot be generalised to older patients with associated pulmonary comorbidities and heart failure or other patients with pleural effusions.^{4,5}

The authors brought some interesting suggestions on a topic that is usually supported by scarce evidence. Nevertheless, before extrapolating these results, the following questions need to be addressed first. Will CPAP therapy be associated with the same tolerance and benefits in patients with other types of pleural effusion? Do physiotherapy interventions alone improve clinical parameters in patients with pleural effusions? To what extent would physiotherapy interventions be able to improve mobility in older and frail patients with a pleural effusion who are unable to walk?

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Correspondence: Reply to Lebret et al

We thank Dr Lebret and colleagues for their interest and comments regarding our randomised trial.¹ Initially, they summarise our conclusion that the combination of continuous positive airway pressure (CPAP) with mobilisation and respiratory techniques reduced the duration of chest drainage and length of hospitalisation. They then comment that this conclusion gives the impression that the mobilisation and respiratory techniques had an independent effect on the resolution of pleural effusion. We do not understand why Lebret et al think that we gave that impression because we only referred to the effect of the combination of interventions that this group

received. The only time we discussed the effect of mobilisation and respiratory techniques alone was in relation to the other experimental group, and we concluded that it did not differ from control. In the analysis of Dr Lebret and colleagues, however, the effect obtained in the group that received CPAP, mobilisation and respiratory techniques could only have been due to the CPAP alone. We cannot agree or disagree with this interpretation. Perhaps it is correct (for the reasons that Lebret et al describe), but it is equally possible that the effect of the CPAP is mediated or enhanced by mobilisation and/or respiratory techniques (even though they do not independently improve

outcomes). It is not possible to know which of these interpretations is correct because the study did not have a comparator group using only CPAP. A CPAP-only group was not included when we wrote the study protocol² because we considered real clinical conditions. We argue that any treatment that requires hospitalisation for a few days should already include both respiratory care and physical rehabilitation for the patient.³⁻⁶

Another comment was about the population included in our trial.¹ We agree that most of the participants had pleural fluid after thoracic trauma; indeed, this issue was raised as the first limitation of the study in the Discussion section. We appropriately indicated uncertainty (with the phrase *may indicate*) when we discussed the results in relation to other types of pleural fluid collection. In our opinion, the study population does not diminish the importance of the results. Clinical discussions around the use of high positive airway pressure in patients with chest drainage are often permeated by the physiotherapists' and physicians' fear of aerophagia, pleural fistula, air leakage or low patient compliance. These fears are refuted by our trial for its population and by other studies for the populations they investigated.^{7,8} We agree that, in view of these good first results, trials focusing on patients with other causes of pleural effusion should be conducted. In this way, physiotherapists can use the best and safest intervention for each clinical population that receives chest drainage.

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