Ventilator-Associated Pneumothorax: Drainage Is Not Always Necessary

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Pneumothorax is a condition with air in the pleural cavity, resulting in partial or total collapse of the lung. The cause of pneumothorax is often unknown, so-called primary spontaneous pneumothorax (SP) occurring in those who have no known lung disease, whereas secondary SP occurs in those with a known pulmonary abnormality.

Traumatic pneumothorax is caused by forces applied to the chest (wall) that result in damage to the parietal and visceral pleura. Examples of this are iatrogenic or traumatic lesions. Another traumatic cause is when a force is applied from the outside to the inside of the lungs by creating a positive pressure in the airways and lung parenchyma during artificial ventilation, either manually or with a ventilator. This is described as 'ventilator-associated pneumothorax'.

Treating a primary SP has always been a point of debate. This debate is not yet over; in those giving active treatment, such treatment might range from aspiration or chest tube drainage to surgical pleurodesis or pleurectomy [1–3]. In contrast to such invasive treatment, in those without symptoms and a small pneumothorax, observation is still a possible and acceptable approach.

For recurrent or secondary pneumothorax and traumatic pneumothorax, the decision regarding treatment is

related to the cause. For ventilator-associated pneumothorax, the type of treatment is 'set in stone': chest tube drainage is required. This was based on a retrospective study in 74 patients that was published almost 4 decades ago [4], which reported signs of a tension component in 95% and a high mortality rate of 30% if drainage was delayed. However, in the observational study by Wu et al. [5] in this issue of *Respiration*, this standard of care is questioned. The authors describe the outcome of a ventilator-associated pneumothorax without intervention in a group of 27 patients. In almost half of the patients there was a spontaneous recovery after a median of 4 days. In a univariate analysis, it was demonstrated that easily evaluable clinical factors predisposing to spontaneous recovery were: a lack of respiratory distress, a large tidal volume and a low oxygen requirement following the pneumothorax.

The described group of patients was unique as 89% had a 'do not resuscitate' status, and it might therefore be difficult to apply the conclusion reached by these authors in a large group of patients with ventilator-associated pneumothorax treatment. Nevertheless, the observation is of value and might indeed be a reason to evaluate this in a selected group of patients with a ventilator-associated

pneumothorax and the presence of favorable prognostic criteria. Patients treated with (noninvasive) home mechanical ventilation during the greater part of 24 h could be good candidates. Particularly for such patients, a conservative approach may prevent prolonged hospitaliza-

tion during active treatment of the pneumothorax. Confirmation in the form of an observational phase-II-type study would be appropriate to determine whether the findings of Wu et al. [5] should lead to a change in current practice.

References

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