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EDITORIAL

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Do we need ARDS?

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This is a good question, isn't it? After all, once we've made a diagnosis of ARDS (acute respiratory distress syndrome), what do we actually do with it? Does it really change the way we treat these patients? In Berlin, we revisited the criteria for ARDS diagnosis [1], but was this a major advance? Some years ago, one would have claimed that a diagnosis of ARDS indicated that a protective ventilation strategy using small tidal volumes was needed. However, we have now learned that this strategy is also of use in patients at risk of ARDS, and, even more, that it should be used in all ventilated patients, even for short periods of time during surgery [2]. Hence, because we also need to apply some positive end-expiratory pressure (PEEP) in severe hypoxemia, identification of ARDS does not mean different ventilator settings. Profound sedation, even with muscle relaxants, may be needed in all forms of severe respiratory failure, to improve tolerance to extreme respiratory conditions. Likewise, we have not been able to develop any specific pharmacologic intervention for ARDS. Admittedly, one could argue that the label 'ARDS' is merely a marker of severity, highlighting a need for special care and attention, but this is also the case for other causes of severe hypoxemia.

A key issue is the notoriously heterogeneous nature of ARDS, as a result of the variety of associated diseases and also the underlying pathological alterations. Autopsy studies have revealed that many patients do not have the typical diffuse alveolar damage (DAD) pattern; in our experience, only 50 % of patients with a clinical diagnosis of ARDS who underwent autopsy had DAD [3]. In a very recent autopsy study, Lorente et al. [4] reported that DAD was associated with greater degrees of respiratory and general disease severity, and with a greater likelihood of death from shock. Kao et al. [5] reported that only 56 % of 101 patients with a clinical diagnosis of ARDS who underwent open lung biopsy had DAD; a pathological finding of DAD was associated with increased hospital mortality in these patients. Likewise, in 83 patients with ARDS who underwent open lung biopsy, Guerin et al. [6] reported that DAD, present in 58 % of these patients, was associated with more severe ARDS.

The risk is that, once a diagnosis of ARDS is made and the label attached, we may focus our attention on fine tuning mechanical ventilation and perhaps using prone positioning in severe cases (when practically feasible). We may think we have a diagnosis, so that the search for an underlying cause is neglected. Yet ARDS is not a specific disease and control of the cause is of paramount importance to maximize a patient's chances of survival.

According to the standard criteria [1], a diagnosis of ARDS requires the presence of an identified risk factor. However, there are cases where the clinical presentation is identical, although there is no identified risk factor. Common causes of such 'pseudo-ARDS' cases were recently reviewed by Guerin et al. [7]. In a recent article in *Intensive Care Medicine*, Gibelin and colleagues [8] reviewed their experience at two large centers in Paris and found that 50 (7.5 %) of 665 patients labeled as ARDS in fact had 'pseudo-ARDS', because they did not have an identified risk factor. These patients in general had less severe acute illness and a slower progression of their

respiratory failure. As expected, cancer, pulmonary fibrosis and vasculitis represented the majority of these cases, and this may explain the generally higher mortality rates in these patients. Importantly, some of these 'pseudo-ARDS' cases had potentially reversible conditions, and the use of corticosteroids may have been beneficial. Indeed, one could consider that corticosteroids were indicated in most, if not all, these patients, and were actually administered in 17/17 survivors and 25/33 non-survivors. The authors propose that this strategy should be studied prospectively, but we contend that the evidence in support of such an approach is already strong enough. In any case, a prospective study of these rare cases would hardly be feasible.

The key message is that we must always try to find a cause for severe acute respiratory failure. Indeed, this is a concept that can be generalized to any severe disease, and is also true for other syndromes, like sepsis, shock or coma. Even brain death needs to have a defined cause. Finding the underlying cause of the severe respiratory failure can not only help guide treatment but may also lead to earlier discontinuation of life support if a non-reversible, terminal condition is identified.

In summary, these interesting observations by Gibelin et al. stress that 'pseudo-ARDS' syndromes without an identified risk factor are associated with higher mortality rates than 'pure' ARDS. They also emphasize the need to always search for a cause for the respiratory failure, using computed tomography (CT) scanning, bronchoalveolar lavage and even lung biopsy in some cases. This approach may encourage the use of corticosteroids in these 'pseudo-ARDS' patients.

So, do we actually need 'ARDS'? Not if it carries the risk that underlying, potentially treatable causes are missed.

Compliance with ethical standards

Conflicts of interest The authors have no conflicts of interest related to this manuscript

References

1. Ferguson ND, Fan E, Camporota L, Antonelli M, Anzueto A, Beale R, Brochard L, Brower R, Esteban A, Gattinoni L, Rhodes A, Slutsky AS, Vincent JL, Rubenfeld GD, Thompson BT, Ranieri VM (2012) The Berlin definition of ARDS: an expanded rationale, justification, and supplementary material. Intensive Care Med 38:1573–1582
2. Sutherasan Y, Vargas M, Pelosi P (2014) Protective mechanical ventilation in the non-injured lung: review and meta-analysis. Crit Care 18:211
3. de Hemptinne Q, Remmelink M, Brimioulle S, Salmon I, Vincent JL (2009) ARDS: a clinicopathological confrontation. Chest 135:944–949
4. Lorente JA, Cardinal-Fernandez P, Munoz D, Frutos-Vivar F, Thille AW, Jaramillo C, Ballen-Barragan A, Rodriguez JM, Penuelas O, Ortiz G, Blanco J, Pinheiro BV, Nin N, Del Carmen MM, Esteban A, Thompson TB (2015) Acute respiratory distress syndrome in patients with and without diffuse alveolar damage: an autopsy study. Intensive Care Med 41:1921–1930
5. Kao KC, Hu HC, Chang CH, Hung CY, Chiu LC, Li SH, Lin SW, Chuang LP, Wang CW, Li LF, Chen NH, Yang CT, Huang CC, Tsai YH (2015) Diffuse alveolar damage associated mortality in selected acute respiratory distress syndrome patients with open lung biopsy. Crit Care 19:228
6. Guerin C, Bayle F, Leray V, Debord S, Stoian A, Yonis H, Roudaut JB, Bourdin G, Devouassoux-Shisheboran M, Bucher E, Ayzac L, Lantuejoul S, Philipponnet C, Kemeny JL, Souweine B, Richard JC (2015) Open lung biopsy in nonresolving ARDS frequently identifies diffuse alveolar damage regardless of the severity stage and may have implications for patient management. Intensive Care Med 41:222–230. doi:10.1007/s00134-014-3583-2
7. Guerin C, Thompson T, Brower R (2015) The ten diseases that look like ARDS. Intensive Care Med 41:1099–1102. doi:10.1007/s00134-014-3608-x
8. Gibelin A, Parrot A, Maitre B, Brun-Buisson C, Dessap Mekontso A, Fartoukh M, de Prost N (2015) Acute respiratory distress syndrome mimickers lacking common risk factors of the Berlin definition. Intensive Care Med. doi:10.1007/s00134-015-4064-y