Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Pathophysiology of COVID-19-associated acute respiratory distress syndrome

We congratulate Giacomo Grasselli and colleagues[1] on their work in comparing acute respiratory distress syndrome (ARDS) in COVID-19 with classical ARDS. They found that median compliance in COVID-19 ARDS was higher than in classical ARDS, even after stratified analysis. However, they finally concluded that this difference was not significant. There are multiple reasons why important differentiating information might have been lost in the analyses.

The grouping is based on the dichotomisation (high *vs* low) of the two continuous variables: D-dimer levels and compliance. Dichotomisation is well known to lead to loss of information, with up to a third being lost,[2] as well as increasing the risk of generating a false-positive hypothesis.[3] Dichotomisation using the median value as a cutoff in unimodal data is unlikely to find populations that are significantly different from each other. A multivariate regression analysis with mortality as the primary outcome might have been better.

While ventilatory ratio is a good surrogate marker for dead space in lungs, the Enghoff modification of the Bohr equation or the Harris-Benedict equation of energy expenditure are more accurate markers that could have been used in this study.[4] Additionally, since the estimation of lung weight on CT scan was done only on 20 patients (less than 7% of all 301 patients), it is unlikely to be representative of the entire population.

Information on the distribution of baseline comorbidities such as hypertension, diabetes, and pre-existing lung disease has not been provided. Furthermore, even though a large proportion of the study population received therapy with steroids (128 [43%] patients) and anticoagulation (182 [60%] patients), their distribution among the groups is not known. Since these factors are known to affect mortality, these covariates need to be adjusted for in all mortality analyses.

Finally, both the pro-inflammatory state in COVID-19 and the high body-mass index of the population (median 27·8, IQR 25·3–31·1) would predispose patients to cardiovascular mortality, which might behave as a confounder in the analysis on mortality. Thus, the cause of death (respiratory, cardiovascular, septic, or other) needs to be taken into account while drawing conclusions about mortality in relation to ARDS.

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We declare no competing interests.

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