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Letters

Association Between Metoprolol and Prognosis of COVID-19 Patients



A study by Clemente-Moragón et al (1) recently explored the efficacy of metoprolol in COVID-19 patients with acute respiratory distress syndrome (ARDS) who are receiving invasive mechanical ventilation (MV) treatment. However, the following issues should be assessed further.

First, as stated, COVID-19 patients receiving invasive MV treatment were enrolled. However, the information about ventilation mode or parameters is lacking. It should be emphasized that the mode and parameters of invasive MV are associated with the prognosis of patients. A recent meta-analysis showed that airway pressure release ventilation (APRV) was associated with lower mortality and improved oxygenation compared with traditional MV treatment (2). Furthermore, an animal model study indicated that APRV prominently reduced the changes in lung histopathology and prevented ventilator-induced lung injury (3). Undoubtedly, lung injury is related to lung inflammation (neutrophils), which makes it extremely difficult to judge whether the reduction of neutrophils is caused by metoprolol or ventilation mode or parameters.

Second, as described in Supplemental Table 3, left ventricular ejection fraction, left ventricular outflow tract velocity time integral, and right ventricular outflow tract velocity time integral were measured at 3 different times: day 1 (before metoprolol or control treatment), day 1 (after metoprolol treatment), and day 3 (after metoprolol treatment). Additionally, considering that the data are skewed distribution data, the generalized linear model (GLM) should be used for comparison between groups, not nonparametric tests. GLM not only considers the impact of

group differences (metoprolol vs control), but also takes into account the influence of time factors on the final outcomes. Although the final conclusions will not change significantly, appropriate statistical methods will help to increase the repeatability and reliability of this study.

Third, the use of glucocorticoids in COVID-19 patients cannot be ignored. A meta-analysis has shown that glucocorticoid use was associated with hospital stay and absorption of pulmonary inflammation in COVID-19 patients (4). Thus, it is necessary to provide information regarding glucocorticoids use between groups.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the [Author Center](#).

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