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## Letter to the Editor

**The association between corticosteroid uses and mortality among severe COVID-19 patients**

To the Editor

We read with great interest recent meta-analysis<sup>1</sup> by Yang et al., in which they analyzed a total of 5270 patients from 15 studies and found that the use of corticosteroid treatment was associated higher mortality, longer length of stay and a higher rate of bacterial infection among patients with coronavirus infection. By contrast, another meta-analysis<sup>2</sup> including 7 randomized controlled trials of a total 1703 patients by WHO Rapid Evidence Appraisal for COVID-19 Therapies (REACT) Working group demonstrated that administration of systemic corticosteroid was associated with a lower 28-day all-cause mortality, compared with usual care or placebo (OR, 0.66; 95% CI, 0.53–0.82 based on a fixed-effect model). Although the difference between these two studies may be attributed to different study design and populations, we have one serious concern about the findings of REACT Working group.

In that meta-analysis,<sup>2</sup> RECOVERY trial<sup>3</sup> comprised 59% ( $n = 1007$ ) patients, and it was suspected to exert most influence on the results of this meta-analysis. In the leave-one-out sensitivity analysis, we can find that the magnitude of association between corticosteroid and mortality was significantly influenced by RECOVERY trial.<sup>2</sup> If we removed RECOVERY trial,<sup>3</sup> although the mortality rate of patients receiving corticosteroid was numerically lower than that of control group, the difference did not reach statistical significance (OR, 0.78; 95% CI, 0.56–1.07, Fig. 1). Moreover, the finding was consistent in the sensitivity analysis

and in random-effect model analysis (OR, 0.78; 95% CI, 0.54–1.12). Therefore, we suggest the use of corticosteroid for patients with severe COVID-19 should be cautious. Further large-scale study is warranted to clarify this issue during this COVID-19 pandemic.<sup>4</sup>

**Reference**

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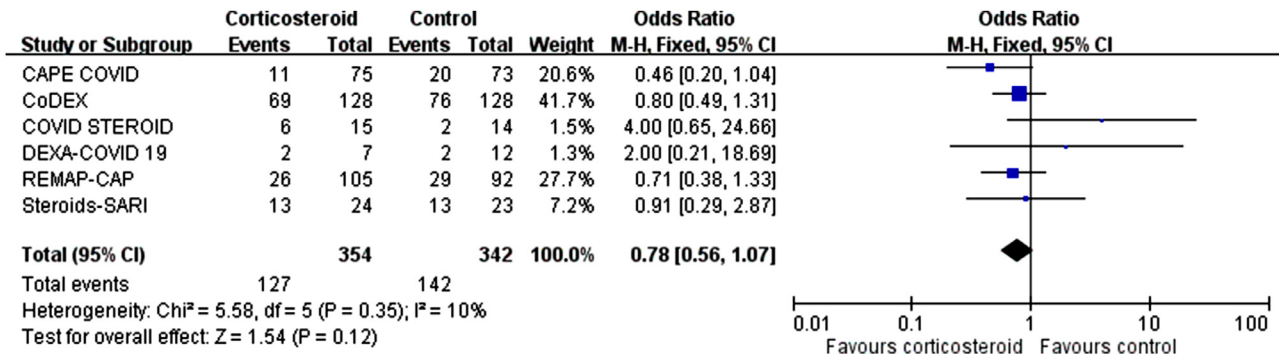
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Fig. 1. Association Between Corticosteroids and 28-Day All-Cause Mortality After Excluding RECOVERY Trial.