Effect of Subcutaneous Tocilizumab on Mortality in Patients With COVID-19: A Meta-analysis of Retrospective Cohort Studies

To the Editor:

Several case reports and retrospective cohort studies have described the experience with intravenous (IV) tocilizumab (TCZ) in treating severe coronavirus disease 2019 (COVID-19),[1–3] with results showing improved clinical symptoms and lung functions. However, to the best of our knowledge, the data on subcutaneous (SC) use of TCZ are lacking. Therefore, we performed a meta-analysis comparing the mortality rate among patients with COVID-19 who received subcutaneous tocilizumab versus intravenous tocilizumab.

After a literature search, we found 2 studies that compared the efficacy of SC TCZ and IV TCZ were included in this analysis.[2,3] In the study by Guaraldi et al,[3] they assessed the use of tocilizumab (91 patients were given subcutaneously with a dose of 324 mg in total and 88 patients were given intravenously with a dose of 8 mg/kg body weight, up to a maximum of 800 mg) plus standard care for hospitalized patients with severe COVID-19 pneumonia. In the study of Kaminski et al,[2] they compared the effect of subcutaneous (324 mg in total) and intravenous tocilizumab (400 mg) for hospitalized patients with COVID-19. The outcomes including 7-day mortality, 14- to 28-day mortality, and requirement for mechanical ventilation. Overall, 151 and 153 received SC TCZ and IV TCZ, respectively.

In the pooled analysis of 2 studies, the 7-day mortality rate was 23.3% (35/150) in the SC TCZ group and 19.0% (29/153) in the IV TCZ group. In addition, the 14- to 28-day mortality rate was 54.4% (81/149) in the SC TCZ group and 45.0% in the IV TCZ

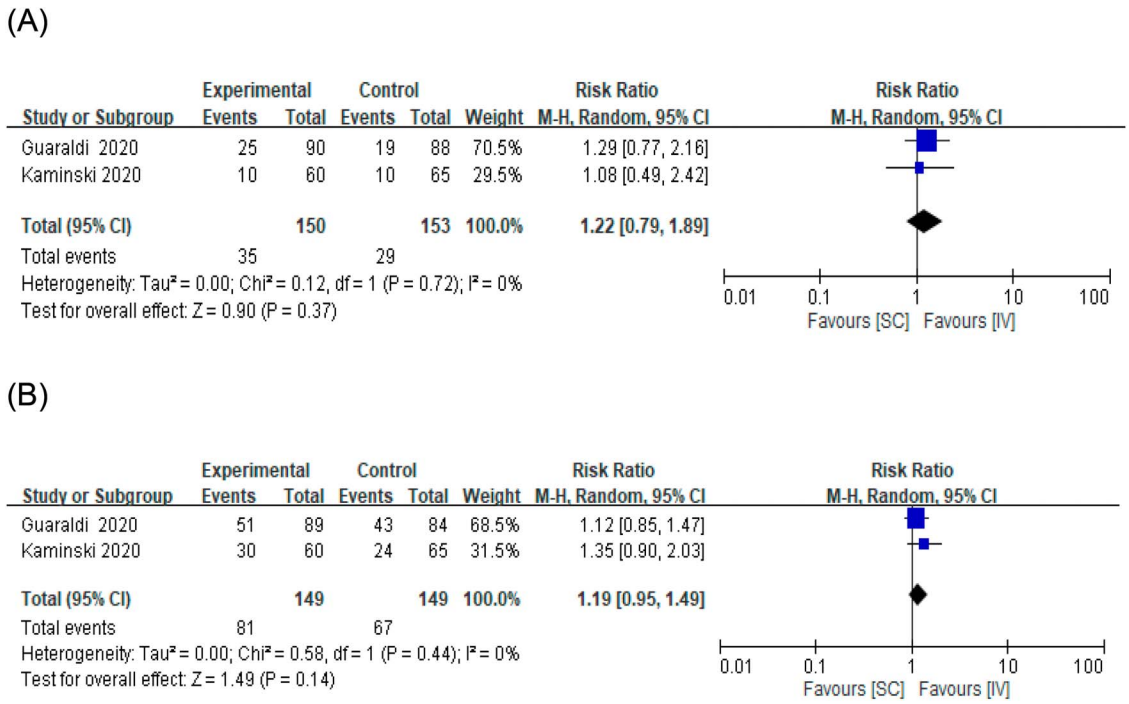

FIGURE 1. (A) Forest plot of 7-day mortality rate. (B) Forest plot of 14- to 28-day mortality rate between SC tocilizumab and IV tocilizumab.

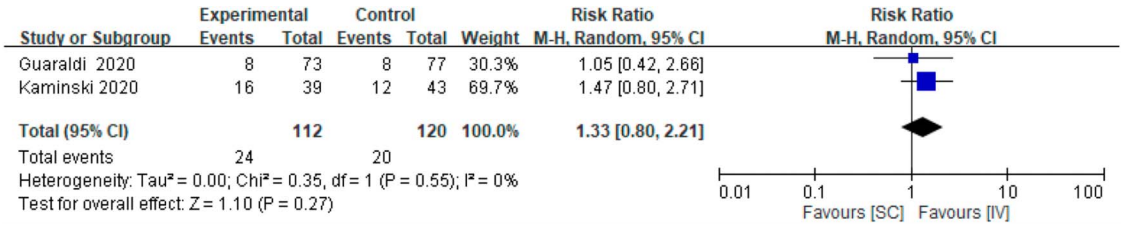

FIGURE 2. Forest plot of events of mechanical ventilation between SC tocilizumab and IV tocilizumab.

group. Pooled analysis observed no significant difference in mortality within 7 and 14–28 days of administration of SC TCZ compared with IV TCZ [pooled RR = 1.22; 95% confidence interval (CI), 0.79–1.89; pooled RR = 1.19; 95% CI, 0.95–1.49, respectively] (Figure 1). However, the rate of mechanical ventilation in the SC TCZ group was 21.4% and that in the IV TCZ group was 16.7%. There was no significant difference in events of mechanical ventilation between the SC TCZ group and IV TCZ group (pooled RR = 1.33; 95% CI, 0.80–2.21) (Figure 2).

Based on the finding of this study, the mortality within 7 and 14–28 days and events of mechanical ventilation after administration of SC TCZ compared with IV TCZ were similar. In summary, our finding indicates that SC TCZ can be a potential candidate therapeutic agent for COVID-19 patients. However, our results should be interpreted cautiously. Only 2 studies of small sample sizes were included in this analysis, and all were retrospective cohort studies. In addition, the doses of IV TCZ were different in the 2 studies. Finally, patients had severe COVID-19 pneumonia in the study by Guaraldi et al but not in the study of Kaminski et al.

In conclusion, subcutaneous and intravenous formulations of tocilizumab used to treat the cytokine storm due to COVID-19 may have an apparent equal effect (mortality within 14-28 days: RR = 1.19; 95% CI, 0.95–1.49; events of mechanical ventilation: RR = 1.33; 95% CI, 0.80–2.21).

Tzu Rong Peng, MS[1]
Ta Wei Wu, MS[1,2]
An Jan Wu, MS[1]
[1]Department of Pharmacy, Taipei Tzu Chi Hospital Buddhist Tzu Chi Medical, Foundation, New Taipei City, Republic of China
[2]School of Pharmacy, College of Pharmacy, Taipei Medical University, Taipei City, Republic of China

The authors have no conflicts of interest to declare.

Study design: T. W. Wu; Data analysis: T. R. Peng; Writing: T. R. Peng; A. J. Wu.

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Risperidone-Induced Acute Urinary Retention in a Patient With Major Depressive Disorder With Psychotic Features: a Case Report

To the Editor:

All antipsychotics are believed to have varying degrees of anticholinergic effects and may cause urinary retention. However, risperidone-induced acute urinary retention has rarely been reported in the literature.[1] Here, we have reported a patient with major depressive