

vival at 3 months using random-effects Cox models that were adjusted for age at randomization and center. We performed a post-hoc analysis that was stratified by CRP. Statistical analyses were conducted using R, version 3.6.4 (R Foundation).

Results | By day 90, death had occurred in 7 of 63 (11%) and 11 of 67 patients (18%) in the tocilizumab and usual care arms, respectively (adjusted hazard ratio [HR], 0.64; 95% CI, 0.25-1.65) (Figure). When outcomes were analyzed according to CRP levels, we found a statistical interaction between CRP levels and the primary composite end point at day 14 and survival at day 90, with a benefit of tocilizumab in patients if their CRP levels were greater than 15.0 mg/dL (to convert to mg/L, multiply by 10), but not if CRP levels were 15.0 mg/dL or less. In patients with CRP levels greater than 15.0 mg/dL, the chance of achieving the primary end point (the percentage of patients who received noninvasive or invasive ventilation or those who died) was 18% and 57% in the tocilizumab and usual care groups, respectively (HR, 0.18; 95% CI, 0.06-0.59) (Table). Likewise, day-90 mortality was 9% and 35% in the tocilizumab and usual care groups, respectively (HR, 0.18; 95% CI, 0.04-0.89) (Table). Usual care could differ among centers and over time, and few patients were taking steroids at randomization (16% and 18% in the tocilizumab and usual care arms, respectively). The sample size was small and credibility intervals were wide. Lastly, in this trial, we targeted a narrow segment of the COVID-19 patient population (patients with a World Health Organization Cognitive Performance Scale score of 5 exactly and requiring at least 3 L/min of oxygen), and our results are not generalizable to other populations.

Discussion | This follow-up analysis suggests that tocilizumab may be considered for treating patients with moderate-to-severe COVID-19-associated pneumonia and high CRP levels. Further studies will help determine which patients with COVID-19-associated pneumonia would benefit the most from a combination of tocilizumab and dexamethasone.

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