

Response to: 'Correspondence on 'Prevalence and clinical outcomes of COVID-19 in patients with autoimmune diseases: a systematic review and meta-analysis'' by Yang *et al*

We thank Yang *et al*¹ for their comments with an updated meta-analysis to our research article 'Prevalence and clinical outcomes of COVID-19 in patients with autoimmune diseases: a systematic review and meta-analysis'.² Their findings contribute to accurate elaboration and substantiation of our findings.

Yang *et al*¹ undertook an updated meta-analysis, including studies that were reported after our article was published, and found that patients with autoimmune diseases had a significantly increased risk of mortality compared with those without. This is in contrast to our results which showed no such increased risk. This difference is likely due to the larger number of publications and patients included in their updated meta-analysis. Indeed, there are a growing number of patients with autoimmune diseases who had SARS-CoV-2 infection being reported. Since the COVID-19 Global Rheumatology Alliance was launched in March 2020, >5000 cases globally have been identified via its European and global registries.³ Temporal trends in their outcomes might have been changing. A study assessing the outcomes of COVID-19 among patients with rheumatic and musculoskeletal diseases (RMD) divided patients into early and recent cohorts (patients who were diagnosed with COVID-19 before and after 12 April 2020, respectively). Compared with the recent RMD cohort, a higher risk of mechanical ventilation was noted in the early cohort, suggesting improved management of COVID-19.⁴ Similarly, a recent cohort study from the USA demonstrated a lower risk of severe COVID-19 in patients with RMD in more recent months (from 20 April 2020 to 19 July 2020) compared with the earlier months (from 20 January 2020 to 19 April 2020).⁵ The improved outcome might be due to increased testing capacity, which allowed to identify mild cases, or improved supportive care for COVID-19.⁵ While the overall outcome of severe COVID-19 in autoimmune diseases appears to be improving over time, the updated meta-analysis by Yang *et al*¹ identified that they have an increased risk compared with those without. Interestingly, the risk was greater in Europe and the USA, but not Asia, suggesting that the risk may be greater in hard hit regions.

The situation of the COVID-19 pandemic is changing drastically, and it is far from over. While not many effective treatments have been developed yet, the introduction of vaccines may reduce the risk of infection and mortality in the vulnerable population, including patients with autoimmune diseases. The updated meta-analysis by Yang *et al*¹ provides additional insight into the risk of COVID-19 in patients with autoimmune diseases and we agree that serial update of outcomes research is necessary to improve our understanding and knowledge of COVID-19.

Shintaro Akiyama ,¹ Shadi Hamdeh,² Dejan Micic,¹ Atsushi Sakuraba ¹

¹Inflammatory Bowel Disease Center, The University of Chicago Medicine, Chicago, Illinois, USA

²Department of Internal Medicine, Division of Gastroenterology, Hepatology and Motility, University of Kansas, Kansas City, Kansas, USA

Correspondence to Dr Atsushi Sakuraba, Inflammatory Bowel Disease Center, The University of Chicago Medicine, Chicago, IL 60637, USA; asakurab@medicine.bsd.uchicago.edu

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ORCID iDs

Shintaro Akiyama <http://orcid.org/0000-0003-0727-7638>

Atsushi Sakuraba <http://orcid.org/0000-0003-2519-6129>

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