Author response to: correspondence to: 'A meta-analysis of granulocyte-macrophage colony-stimulating factor (GM-CSF) antibody treatment for COVID-19 patients'

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To the Editor,

We read the letter from Pankaj *et al.*, which is regarding our recent study titled 'A meta-analysis of granulocyte-macrophage colony-stimulating factor (GM-CSF) antibody treatment for COVID-19 patients'.[1] We appreciate their attention and agree with them that we have mistakenly included several studies evaluating the role of IL-6 inhibitors. We have also noticed this error by a kindly email from Dr. Stefan Steidl, Vice President, Disease Biology & Translational Research, on 27 August 2021.

Immediately after reading the email from Dr. Stefan Steidl, I (Z.X.) discussed with the two co-first authors (J.G. and W.W.) and another corresponding author (S.L.). Considering this topic is very interesting and important, as well as that unpredictable outcomes may be resulted from these errors, all the authors reach a consensus on trying to do a correction or update analysis. Thus, we did an updated systematic literature search from 1 December 2019 to 29 August 2021, which was limited to anti-GM-CSF therapy. Finally, we collected six studies, including the two previous cohort studies[2,3] and four new randomized controlled trials.[4-7] Based on these new pieces of evidence, we have finished the update meta-analysis and have emailed it to the editorial office to apply a formal correction.

In our update meta-analysis, a total of six eligible literature involving 1542 COVID-19 patients were recruited, including anti-GM-CSF therapy treatment group ($n = 761$) and control group ($n = 781$). Using a random-effect model, we found that the GM-CSF antibody treatment was associated with a 4.3–26.9% decline of the risk of death [odds ratio (OR) = 0.71, 95% confidence interval (CI): 0.53–0.95, $p = 0.02$], a 5.3–28.7% reduction of the incidence of invasive mechanical ventilation [OR = 0.53, 95% CI: 0.31, 0.90, $p = 0.02$], and a 23.3–50.0% enhancement of ventilation improvement [OR = 11.70, 95% CI: 1.99, 68.68, $p = 0.006$]. Besides, GM-CSF antibody treatment did not have a significant correlation to secondary infection. Thus, the main results of our new analysis still support our previous conclusion that severe COVID-19 patients can benefit from GM-CSF antibodies, though further randomized controlled trials are still needed for further verification.

Thank you very much!

Author contributions

J.G. and Z.X. wrote this letter in consultation with S.L. and W.W.

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Conflict of interest statement

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